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CRANIAL SURGERY.*

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I believe it very important to observe in cranial surgery, as a rule, the dictum, when in doubt operate. If one is in doubt about operating in the case of recent injury without shock, it is indeed difficult for him to come to a conclusion unless he has means for determining that intracranial pressure means progressing hemorrhage, and in such a case, even in the presence of the shock, he must operate, even against this dictum in surgery.

In some cases we shall have added a psychotic feature which will be confusing if we try to follow the dictum. I saw a little girl recently struck by an automobile in the temporal region, causing contusion of the scalp; the patient was unconscious for a few hours and vomited. I saw her about ten hours later. At that time she appeared to be partly apathetic, threw herself always to the left, with arms and legs sharply flexed and eyes deviating to the left, but there was a normal pulse, normal respiration and normal pupillary reflex and no disturbance of the sphincters. I had no means at that time for determining the question of increased intracranial pressure, but I felt that a certain hysterical feature was present in the case, there was something in the manner and bearing of the little girl which indicated that feature, and on getting the family history, which was neurotic from one side of the family, it seemed to me that this very marked tendency of the child to snap into a position of contraction of arms and legs and to lie on the left side represented in part a psychotic feature rather than brain injury, excepting for meningeal contusion. She made very good recovery in the course of about a week—a progressive recovery, without anything in particular having been done for her.

In cases of recent brain injury with fracture of the skull, we sometimes hear it said that in all probability there is nothing more than a brain clot present, a dural clot; but in cases in which we are dealing with a sub-dural clot we have a very serious menace to the integrity of the brain, for the reason that the pressure made by a clot, even though aseptic, causes permanent cell injury; the gray matter becomes fatty, and there is a replacement by connective tissue of the clot so slowly that brain parenchyma changes, brain cortex changes take place in a very injurious way. Ordinarily an aseptic blood clot undergoes slow replacement by cells that are nearest to the clot and we may ordinarily wait for absorption of blood clot in any part of the body excepting in connection with the brain or cord, and there the secondary changes from its presence are so serious in their nature that we should operate for the removal of simple clot. If there is fear of arousing a new hemorrhage,—I have often heard that question brought up,—it seems to me that we have a number of resources for stopping the new hemorrhage without making a very extensive operation. Even an artery as large as the middle meningeal may be controlled without much difficulty, if we take a bar of lead and bend it in U form, so that one arm of the U extends within the cranium, and then when that is adjusted over the bleeding point, a little wedge of gauze under the external arm of the U of lead brings pressure enough to bear and we may stop the hemorrhage very quickly, removing your lead bar next day, if you please.

In the case of depressed fracture of the skull—some years ago—while turning up the bone flap for the purpose of removing dural adhesions, I got into the superior longitudinal sinus immediately, because of the position of the fracture, and one of my friends in a discussion of the subject afterward asked how I stopped the hemorrhage. I said, "Why, I did it so quickly, I don't remember." It was really stopped in this way: by placing a periosteal elevator in such a way as to make pressure against this very hard, firm wall of the superior longitudinal sinus, then making a fulcrum with some other instrument and then fastening down this periosteal elevator as a lever. We have so many ways for stopping a hemorrhage that we need not fear this secondary hemorrhage when it becomes necessary to remove a clot.

In this connection, after the blood clot has been removed at the site of the fracture of the skull, we frequently have dural adhesions persisting for years or throughout the patient's life, which are not given a sufficient degree of attention by the profession as a rule. Very many cases of persistent headache, of nervous excitability, of epileptic seizure are due to

*Read before the New York and New England Association of Railway Surgeons, November 8th, 1917.

the presence of dural adhesions following an old cranial injury of such a long standing that the practitioner frequently does not realize the importance of dural adhesions. Dr. Hammond has been particularly keen in recognizing these cases and has sent me a good many and our results in some cases have been better than he had anticipated, and in others nothing was gained; but it is well to keep in mind the fact that dural adhesions following almost any sort of a cranial injury may give rise to symptoms years and years after the injury.

In one patient whom I presented at the Surgical Society last year, a young girl with cyclical mania, very destructive and requiring attendance continually, the question arose as to whether there was any connection between her condition and a brain injury which she had received some years before, a slight fracture of the skull, and the only basis for that supposition was the fact that when she had an attack of acute mania and was very destructive, she would walk about holding one hand always to the right side of her head. In going to tear down a lamp, she would rush to the lamp and tear it down and hold her hand on the right side of her head. I turned down a flap of the skull, found dural adhesions, introduced gold-leaf and she made a complete recovery. Here was a patient who, after being under the care of psychiatrists who had said the case was hopeless, was completely cured by the separation of dural adhesions; and yet in that case the only evidence that we had upon which to proceed was the fact that at times of acute mania she would put her hand to the point where she had the injury of the skull years before.

In regard to the question of preventing recurrence of dural adhesions, I have employed many resources; I have felt that gutta percha tissue would sometimes result in re-formation of adhesions. Cargile membrane would seem to be ideal, but it is difficult to introduce the Cargile membrane very smoothly. Curiously enough, I had occasion some time ago to reopen a skull for the purpose of looking for further dural adhesions about a year after the introduction of Cargile membrane and there, if you please, was the square just as nearly intact as when it was introduced. Under ordinary circumstances this would have undergone absorption in a very few days, three or four days; a year after it was intact in this case; there were no adhesions, however, over the area covered by the Cargile membrane. Gold-foil is pretty good, and one may prepare that by getting packages of gold-foil at the art stores, gold and paper, alternate sheets, and this may be sterilized by dry heat.

The question of the extent of injury is one which it is difficult to decide sometimes at the moment when we see a patient for the first time. According to Davaine's law, the fracture is always at a line of expansion, not at a line of compression. A very small fracture of the external table of the skull may mean that we have a large fragment of the internal plate thrown in upon the brain, and this gives an added damage because of the hypodynamic force of pressure upon the brain. Sometimes the slow development of symptoms after an apparently slight injury may be very misleading.

A young man not long ago was struck by a base-ball in the temporal region. He was inclined to keep on playing, but was persuaded to leave the field; he felt dizzy. He went to one side and took his seat upon the bleachers and in the course of about an hour he began to complain and died. This was clearly a case of rupture of the middle meningeal artery, of the sort that should have been recognized by any surgeon on the field, but it was not, and the one who made the autopsy subsequently told me of his surprise that any man could have lived for fifteen minutes with the degree of hemorrhage going on beneath that skull, and yet the symptoms came on so slowly that no surgical attention was called, although it was near enough at hand.

Then again, after apparently trivial fractures we may have very little disturbance for weeks and suddenly a brain abscess may appear because of the separation of the internal table that has made a point of least resistance to bacterial invasion from the blood current and given us our abscess there three or four weeks, or more, after a comparatively trivial injury. Therefore I am more and more impressed with the idea of following the dictum: when in doubt operate. We shall so often find that we have a clot to care for, a hemorrhage to stop, a fracture of the inner table which may give rise to late appearing symptoms of serious character, but I am more and more impressed with the idea that we are not inclined to operate early enough unless we have at hand means for determining an increasing intracranial pressure.

In regard to fractures at the base, Dr. William Sharpe has told of his having been reprimanded for not sending a patient with a fractured skull from another hospital to Bellevue Hospital. Now I have been at Bellevue Hospital, receiving patients, and I know just exactly what that means. The patients with fractures at the base that were likely to die shortly, or in due time elsewhere, were commonly shipped off to Bellevue Hospital. I believe this: that the idea of keeping the naso-pharynx, the ear

and the nose in as nearly aseptic condition as possible has much more important effect than it is commonly believed to have.

I had hoped that the hypochlorites would offer us a good deal of help in this particular direction, in maintaining a certain approximate asepsis in cases of fracture of the base, but I believe they have not yet prepared the hypochlorites so that they can be used for any great length of time upon the mucous membranes. Otherwise we have an ideal situation for using hypochlorites, where at intervals of an hour or two, one might flush the surfaces through which infection makes its way, but I have found in fractures of the base that if we maintained approximate asepsis, the blood serum which is itself germicidal in a way, will keep the area fairly aseptic, provided that we add irrigation with some weak antiseptic not injurious to the mucous membranes.

In cases in which we are to have continual drainage of the cranial fluid in a brain injury, how are we to obtain a good protection of the brain area? If we have several layers of gauze immediately protecting the area and change the dressings outside of a first layer of iodoform gauze frequently, we shall avoid the entrance of sepsis—one or two layers of iodoform gauze first. That iodoform gauze need not be changed; it may remain for two or three or four days at a time, while we change the outer dressing of gauze very frequently, and in that way we avoid fairly well the menace of the traveling of infection through our dressings and to the brain area.

Fighting Venereal Diseases

A public health program which attempts to fight venereal diseases without suppressing prostitution is as illogical as one which would battle smallpox without isolating victims, as illogical as one which would try to stamp out typhoid fever without providing pure water and sanitary sewers, as illogical as one which would seek to wipe out blindness without treating the eyes of newborn babies.—*The Ohio Public Health Journal.*

Theocin Fatality.

W. W. Cadbury, Canton, China (*Journal A. M. A.*, Jan. 5, 1918), reports two cases of fatality due apparently to the therapeutic administration of theocin. The drug was taken from a bottle which had not been previously opened, but which has since been opened and used on other patients without bad effects. The signs of heart failure developed so soon after the patient took the drug as to make it seem certain that it was responsible. The value of theocin as a diuretic is recognized in cases attended with edema and the uncomfortable symptoms of dizziness and nausea, sometimes previously observed after its oral administration, can be avoided by the exercise of care in its administration and by dieting. No attempt is made to explain the fatal outcome in these cases.

TREATMENT OF MINOR INJURIES.*

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By the term "minor injuries" I do not mean to include fractures or dislocations, but bruises, contusions, lacerations, burns, and injuries to the nerves and muscles, which may occur in any part of the body, especially the extremeties.

Probably one of the most difficult problems with which the railroad surgeon has to deal is the handling of minor cases—cases which are trifling in themselves, but have great potential power for damage, unless good judgment is used. Unfortunately, many of the injured cannot be trusted to care for the slightest wound at home, Therefore it has been my custom to send these cases to the hospital for at least twenty-four to forty-eight hours, until the proper first aid treatment can be rendered and, if necessary, *x*-ray pictures are taken, especially if the bruise or laceration be near a joint, after which they can be returned to their homes and given further treatment at the office.

At the first dressing we do not try to do too much, simply washing out the wound, touching it up with iodine, suturing a nerve or tendon that may be lacerated, and keeping the patient in bed for twenty-four hours, with the injured part absolutely at rest.

Regarding the use of antitoxin for the prevention of tetanus, I have never advocated using it too generally. While these cases are almost invariably covered with railroad dirt and grease, still the injuries have not occurred at points where the bacillus of tetanus is likely to be found; therefore the chances of infection from that organism are very remote. I believe it unnecessary to administer the antitoxin except in cases where the location of the wound indicates it or there is evidence of soil saturation. In this assumption I am of the same opinion as Dr. Miles F. Porter, of Fort Wayne, who, in a paper read before the American Surgical Association, at the Washington meeting in 1916, opposed its use. He was sustained in his contention by some of the leading surgeons of the country.

There is danger in using too radical methods at our first treatment. We all know that nature is a wonderful healer, and if given half a chance, will save much that otherwise might be destroyed by a too hasty amputation or the removal of tissue.

* Read before the New York and New England Association of Railway Surgeons, November 8th, 1917.

It has always been my experience that if one is thorough in the cleansing of the wounds in the beginning, and generous in the application of iodine, as beneficial result is obtained as through the most complicated methods. Undoubtedly iodine is the remedy to use for these minor wounds.

Not wishing to underestimate the value of surgical technic, I believe we can do much harm by a too vigorous cleansing of the wound and that we should use the antiseptic method in preference to the aseptic in the primary treatment.

After the first forty-eight hours, when the reaction has set in and the swelling and discoloration have somewhat disappeared, the wound can be redressed and tissue, etc., can be removed if necessary, meanwhile keeping the parts moist with a good antiseptic solution, like a 1-10000 solution of bichloride of mercury. Then a dry dressing, like iodine ointment, is applied, with satisfactory results.

A difficult problem to solve is: When ought we to return the patient to work? We find in many cases a strong tendency to delay, but I believe it better to be lenient and allow three or four days grace, rather than have them resume work at too early a period.

Perhaps my attitude in this matter is governed somewhat by an unfortunate experience. At my suggestion a man returned to work after having sustained a slight cut on one finger of the right hand, with the result that an infection developed. This incapacitated him for six months and very nearly caused his death.

Under local anesthesia most of these cases can be treated at operation, and rarely is it necessary to administer a general anesthetic. Under the use of cocaine alone I have had gangrene develop due, in my opinion, to the cocaine, so that now this is guarded against with a 1-1000 solution of adrenalin.

My experience with first aid as applied by the layman has been most unsatisfactory, the person administering the first aid either having overdone the matter or it has been insufficient. I have had two or three cases of injury to the hand, the veins having been cut and a novice applying the Esmarch or torniquet just tight enough to prevent the return flow of the blood, with the result that the patient bled very profusely from the veins and the arterial supply of blood was not stopped. Consequently, the patients lost more blood than if this method had not been used. The first aid was rendered by a fellow employee. I cannot say that I am greatly impressed with the advisability of depending upon first aid administered by a layman, when a physician can be summoned so quickly. It is to be regretted that these accidents happen so frequently when no competent layman is about.

As a matter of precaution also, we make it a point to have a Wassermann made in every case, no matter how trival or how severe the injury or whether syphilis is indicated either in the clinical or the personal history of the patient; and we have had some very interesting results. We have been led to this procedure by a couple of puzzling cases. One was a fracture of the upper third of the tibia which refused to knit, and it was not until after a Wassermann was made and a four plus reaction was obtained that we awoke to the fact that the man had syphilis. Proper treatment ensued, the necessary amount of callus was thrown out and the leg healed nicely. The same thing occurred in a trifling wound of the hand, which also refused to heal, granulation tissue continually occurring in the wound.

Another condition of some interest has occurred in certain cases where we have obtained, from no apparent cause, a continuous temperature in the neighborhood of 99° to 100°. There was no suppuration after the injury and the patient was in apparently good condition but for this temperature. The proper amount of stimulants, two or three times daily, brought the temperature down to normal and hastened the recovery. It is not necessary for me to say that this high temperature was due to alcoholic habits.

In cases of hematoma we find it good practice to aspirate the blood under aseptic conditions and then apply firm pressure over the injured area.

In injuries and wounds of the nerves and muscles, followed by inflammation, and where we have an inflammatory condition causing stiffening of the muscles or loss of sensation in the nerves, we have found the use of massage and electricity, as well as hot packs, very beneficial. Soaking the parts in saline baths half an hour or an hour night and morning, has also been of benefit. Local applications of mercurial ointment and in certain cases, ichthyol and some of the iodine ointments, have been of great benefit. Iodide of potassium, saturated solution, internally, also seemed to aid the absorption of the inflammatory exudate and to hasten healing.

In abscesses resulting in infection through opening up of the infected area, the insertion of a drainage tube and irrigation with a bichloride solution or a normal salt solution, proves of great benefit.

In suppuration involving the lymphatic glands,

opening of the glands, painting them with iodine, and thorough drainage, certainly facilitates resolution. In the treatment of burns we have been lately using one of the paraffin preparations, with good results.

I have been having Dr. Wm. G. Lewi treat some of these cases with the high frequency current, and he has kindly given me the following notes with regard to the results obtained through this method of treatment:—

"Conditions due to accidental injuries that are benefited by treatment with high frequency electricity may be summarized as follows:

"First: Local infections. It has been found that in local infections, especially of the closed-wound type, where there has been no suppuration, but where suppuration is imminent, treatment of the infected area with high frequency electricity will result in a cure of the condition in a much shorter time than any other treatment; and in a great proportion of cases without any suppuration. In those cases where heretofore hot-packing has been resorted to it has been observed that the time of necessary treatment; i. e., before the parts are restored to their normal condition and function, is reduced to one-half or a quarter: and whereas with hot-packing constant attention and nursing are necessary, two treatments with high frequency electricity, of from ten to fifteen minutes each a day, is all that is necessary. In the great majority of cases forty-eight hours—elapsed time—is sufficient to bring these cases under complete control, and in cases, for example, of infection of the hand or forearm, where the auxiliary glands have been involved to such an extent that any motion of the arm was painful the cases have been discharged after four or five days. In many of these cases, where under other methods of treatment, incising for the release of possible pus is resorted to, this procedure is unnecessary. The fact that treatment with high frequency electricity produces an hyperaemia (which can be exactly controlled) which is an *active* hyperaemia, replacing the passive congestion usually present in this class of cases, explains without further comment why it acts as favorably as it does.

"In cases of infection, where suppuration has taken place but to a limited extent, and where it is circumscribed, as in furuncles and boils, the results have been equally striking. In a series of more than twenty of these cases we have treated the infected swollen area for from two to three days, usually two treatments each day, have then incised the mass, expressed the pus contents, and (without any irrigation or curetting) have dressed it with adhesive plaster—with a bit of sterile gauze directly over the opening—and they have healed by primary union, with no subsequent suppuration of discharge, excepting for a very small amount of serum on the gauze bit. These latter cases seem to prove that the treatment sterilizes the contents of these infected areas.

"In injuries to the nerves, resulting in paralysis, the results have been more than satisfactory. Also in injuries of nerves resulting in neuritis.

"In injuries to joints, where after the surgeon has done his part there is still remaining a loss or partial loss of function due, as is often the case, to a chronic thickening of the synovia or due to an exudate, the high frequency current will cause an absorption of these abnormalities and restore the function of the joint.

"Periostitis, caused by accidental means, responds promptly to this means of treatment, as does traumatic teno synovitis. A case of the latter, with almost complete loss of motion of the hand, in which the sounds over the affected tendons, heard by means of the stethoscope, on the slight motion of the hand, were like leather being rubbed on leather —almost perceptible without the stethoscope—was discharged in seven days.

"Post-operative infections, which in spite of all precautions do occasionally occur, quickly lose their infective nature and heal rapidly.

"In two cases of ununited fractures, we treated the site of the fracture, but regret to report that there was no improvement in either case.

"Neuritis, whether traumatic or constitutional, has in the great majority of cases been greatly benefited by high frequency treatment; but whether from one cause or the other, there is usually some underlying cause that must be eliminated before a cure can be effected. In many cases of the former where relief has been speedy, cases have recurred, due to the same cause as the previous attack: sometimes postural, at times because of a slight, almost unobservable, repeated blow or even push against the affected nerve. Ascertaining and removing such cause will usually, after treatment, prevent recurrence. And the same may be said of the constitutional causes that bring about, not only neuritis, but many other conditions."

Wherever we travel we encounter the sign "Safety First." As railroad surgeons, I think we ought to adopt as our motto "Conservatism First," and, so far as possible, restrain the tendency to do radical work on the injured when first seen.

"THE ANGEL OF MERCY OF THE UNITED STATES NAVY."

THE U. S. NAVAL HOSPITAL SHIP "MERCY"

N. J. BLACKWOOD,
COMMANDING OFFICER,
MEDICAL DIRECTOR, U. S. NAVY.

A hospital ship is merely a name to many of the medical profession ashore, and when questioned about it they are unable to give a satisfactory description. This need not be the case, if it is understood that a hospital ship is nothing but a floating hospital. In other words, it is a structure containing wards, operating rooms, laboratories, and all the appurtenances that go to make a hospital ashore, only placed upon a floating platform and capable of being transported from place to place at sea. There is also some confusion in the minds of people ashore as to the distinction between hospital ships, ambulance ships and transports for wounded. These also are easily understandable, if one will liken the hospital ship to the hospital, the ambulance ship to the ambulance which brings the patients to the hospital, and the transport for wounded to the train or other conveyance that might be used to carry large numbers of sick and wounded from place to place. These three means for the care of the sick and wounded and their transportation should be definitely fixed in the mind and should not at any time be confused, because their functions and their equipment are totally different. The hospital ship, as before stated, is merely a floating hospital—a vessel equipped with everything that pertains to hospital use for the care of the sick and injured, whose duty it is to attend the fleet at its base and care for all cases of illness and injury originating in the fleet, who, with a fair degree of certainty, may be able to return soon to their duties on their respective ships. It is not a part of the function of the hospital ship to transport sick and wounded from the fleet to a base hospital ashore, nor is it a part of its function to transport sick and wounded across the ocean. Its equipment is far too elaborate for any such purpose, and the spaces allotted for the different departments are too small for the accommodation of large numbers of such casualties.

The hospital ship should remain at the fleet base to repair the personnel of the fleet and return it to its duty, and, unless it should become overcrowded by an excessive number of patients, it should remain at that fleet base or move from one fleet base to another when the fleet itself changes its base. It should never, under any circumstances, be separated from the fleet or its main base but always should at hand to attend the serious and every-day casualties and diseases that the men of the fleet are subject to.

Its function as a hospital ship should not be expanded to take care of any very large number of contagious cases, because these cases may be great in number and of trivial importance in their severity, and the hospital ship would soon become overcrowded with these cases and its utility as a hospital for its legitimate purposes would be destroyed. No argument for this is necessary, as everyone knows who has had any experience with hospitals ashore that the ordinary hospital does not take care of contagious cases, but that special hospitals are built and maintained for the care of contagious diseases. So with the hospital ship—while it may take care of a limited number of contagious cases in order to get them off the fighting ships, it should not be required to take them for any length of time, and the contagious cases should be removed frequently by a contagious disease conveyance or an ambulance ship provided for that purpose. Every fleet should have, in addition to a hospital ship and an ambulance ship, a contagious disease hospital ship similarly equipped to the ordinary contagious hospital ashore.

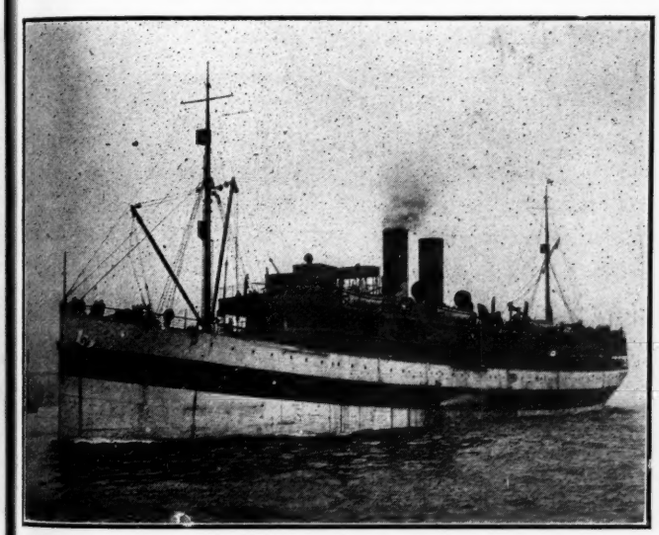
The ambulance ship is the analogue of the ambulance attached to a hospital. It should be a ship of moderate size capable of carrying from 100 to 150 cases and so arranged as to be able to segregate the various kinds of contagious diseases, and also the medical, surgical and other cases that it might carry from fleet to the base hospital ashore. This ambulance ship should make periodical trips from the fleet and transfer the cases of illness and injury which are apparently destined to a long convalescence or whose convalescence will be benefited by the freer life ashore, and also to relieve any congestion which may take place aboard the hospital ship itself. The equipment of the ambulance ship is simple in character; its principal needs being a small operating room and large dressing room for renewing dressings and performing minor surgery, with large spaces for ambulant cases and a sufficient number of bunks to accommodate the more seriously ill. Its galley accommodations should be of the emergency type, but capable of quickly furnishing special diets and meals for the total

number of patients that it can carry. The trips which the ambulance ship would make, would, in all probability, be short, occupying not more than five or ten hours, and the patients, therefore, would require attention and care only during that period. A fairly large staff of nurses might be necessary but the medical and surgical staff could be comparatively small.

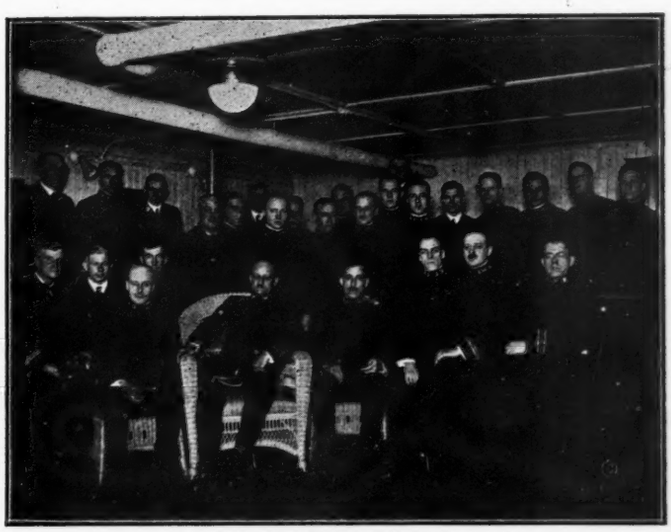
The transport for carrying sick and wounded long distances is altogether a different proposition from the hospital ship and occupies a position midway between the hospital ship and the ambulance ship—not requiring the equipment of a hospital ship and yet requiring more than the ambulance ship. Any large transport could be easily fitted for this purpose, requiring simply in addition to its equipment for ordinary transport purposes, operating and dressing rooms of sufficient capacity, and a large enough corps of nurses and medical staff to take care of the patients for a period of two to three weeks. It would never be contemplated to perform major operations, except in an emergency, and the duties of the personnel would be to renew dressings and care for the ordinary everyday necessities of convalescent and convalescing patients. The difference between these types of ships seems, from this brief review, to be sufficiently clear, but a full description of the hospital ship and its duties will serve to emphasize these differences.

Before the present war began, the United States possessed but one hospital ship, the "Solace", which was a converted merchantman and had been in service as a hospital ship about nine years. Since war was declared, the Navy has added two more hospital ships to its fleet, and the MERCY and COMFORT, two ex-Ward Liners, are now in commission. I am now going to describe to you the MERCY, as she exists today—and as she and the COMFORT are sister ships, the description of one will serve for both.

The MERCY is a ship of about 10,000 tons displacement and is fitted with every modern appliance for the care and treatment of the sick and injured. It will be readily understood that the conversion of a merchant ship into a hospital ship is a very difficult proposition, and the ideal hospital ship will never appear until it is built from the keel up. Such a ship has been appropriated for by Congress and has been started, but owing to the necessity for ships of other character, the work and progress towards completion of this hospital ship have been necessarily delayed. In converting the MERCY into a hospital ship, the endeavor has been made to place the wards for the more seriously sick,—the operating rooms, laboratories, etc., on the upper decks where natural light and ventilation can be utilized to the full, and to locate below on the lower decks such wards and rooms as would accommodate the convalescing, the ambulance cases and the different departments which are not so dependent upon natural light and ventilation. We, therefore, find on the upper or promenade deck, from forward aft, first the operating suite, then the sick officers' ward and convalescent officers' rooms, and abaft these, the isolation wards for contagious diseases. On the deck just below, or hurricane deck, are placed the surgical ward immediately below the operating suite and connected to it by an elevator, the dental office, dressing room, diet kitchen, dispen-



Hospital Ship "Mercy."



The Crew.

sary, *x*-ray room, laboratory, medical ward, and their accompanying appurtenances. Both these decks are above the hull and therefore have thru and thru ventilation and large windows for natural light.

On the main decks are the prophylactic room, the *x*-ray developing and study room, the eye, ear, nose and throat operating room and ward, and the genito-urinary and large convalescent ward.

The rest of the ship is taken up with quarters for the crew and the hospital corps, and storerooms and machinery which are necessary for the upkeep of the hospital as well as of the ship. Let us take up these different departments and see what they contain, and later study the situation from the viewpoint of the ship itself, showing in that review the differences between the hospital ashore and the hospital afloat.

The operating suite, the contents of which, in this particular instance, were donated by the National Society of Colonial Dames of America, consists of operating room, sterilizing room, instrument room, anesthetizing room, scrub-up room, and pus operating room.

The general operating room is a model in equipment and affords all the advantages in the matter of efficiency and the amount of work capable of being performed, that are found in any of our largest civil or military hospitals ashore. On the starboard side of this room is placed a general operating table, with all accessories, such as instrument table, sterilizing drums for dressings, instrument cabinet, Mayo instrument table, immersion bowls, stools, etc. On the port side is the orthopedic operating table, with all its accessories, similar to those on the starboard side. The only difference between this operating room and those ashore is the fact that everything must be secured to the deck in its proper place, and is, therefore, not ordinarily movable. The room also has a portable pantostat machine for cautery work of all kinds. The deck is tiled and the whole room is sheathed with galvanized iron and painted with white enamel paint. A certain amount of natural light comes in through the large ports on all sides, but a fine set of electric lights is furnished over each of the operating tables and also at different places throughout the operating room.

The pus operating room is of fair size and contains an operating table, two small tables, a Mayo instrument table, instrument cabinet, irrigator stand and bowl, immersion stand and bowls, and operator and anesthetizer's stools. This room, like the main operating room, is tiled and sheathed and supplied with both natural and artificial light.

The sterilizing room, though smaller than is often found in hospitals ashore, contains practically all the appliances there found, including two large autoclaves, utensil sterilizer, two instrument sterilizers, sterilizers for hot and cold water, as well as distilled water, and a blanket warmer for dry and moist heat.

The instrument room contains a large instrument cabinet in which the spare instruments are always kept and in which the other instruments may be put when the ship is at sea and motion would disarrange the instruments; a large locker for sterile dressings, a large work table, electric motor bandage machine, enameled desk with drawers, and stationary wash stand with leg control. The list of instruments contained in this room and the other operating rooms is as complete as ingenuity can make it and nothing in the instrument line that could be desired by anyone has been omitted.

The anesthetizing room has the ordinary equipment found in similar rooms in modern civil hospitals, as to furniture and anesthetizing apparatus, prepared for all the various forms of anesthesia, including ether, chloroform, gas, oxygen and their combinations.

The scrub-up room is a large and comfortable room with three basins with leg control, and lockers for the surgeons' garments.

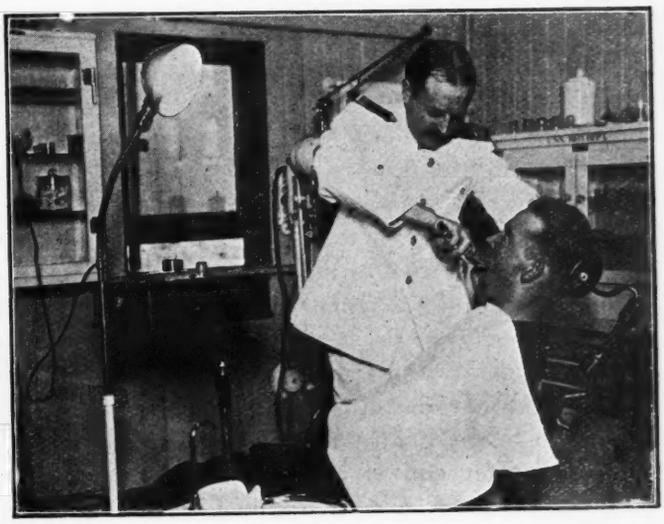
All these rooms, like the operating rooms, are tiled and sheathed, and the general appearance of white enamel paint is not only pleasant to the eye, but an assurance of absolute surgical cleanliness.

The surgical ward, just below the operating room, has space for 54 bunks arranged in two tiers, with a possible expansion capacity to nearly double that number. The bunks are of the tubular iron type with wire woven springs, and many of them are fitted with the Goetz adjustable springs for placing patients in the Fowler position. This ward has attached to it all the necessary water-closet and bath facilities that would be found in a ward of this size in a hospital ashore. The surgical dressing room, which is conveniently located just abaft the ward; contains all desirable equipment for such work, having an operating table, electrical sterilizer, sterilizing drums for dressings, two tables, instrument cabinet, Mayo instrument table, irrigators,

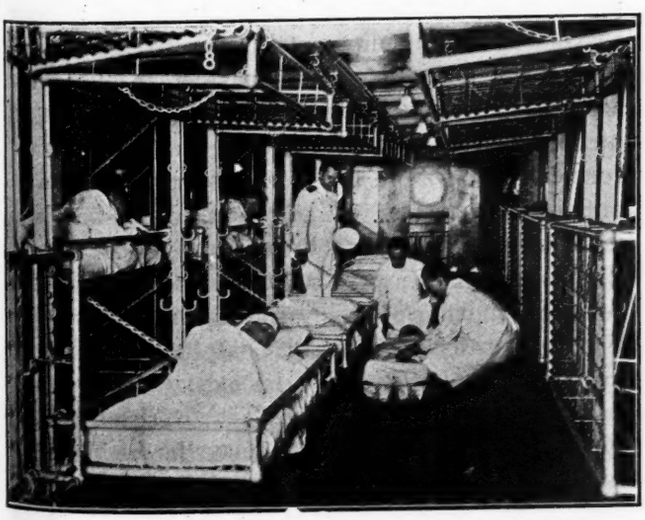
Commander Blackwood.

The Solarium.

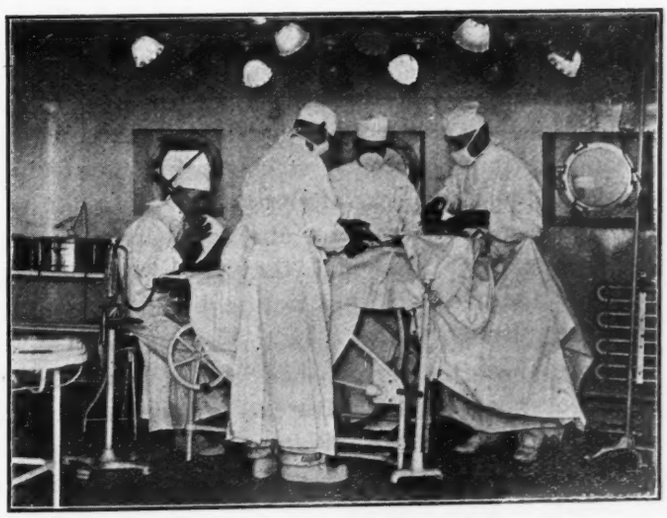
Corner of Operating Room.



The Dental Room.



The Surgical Ward.



Operating Room.

hand bowls with stand, running hot and cold water, soiled dressings container, and operator and anesthetizer's stools. This room is also tiled and painted with white enamel paint.

From the above description, it will be easily seen that four operating teams could work simultaneously, which means that the capacity for efficient surgical work is enormous and probably exceeds anything but the gravest emergency. In order to promote efficiency and cooperation, the head of the surgical department has also general supervision over the roentgenology, genito-urinary, and the eye, ear, nose and throat departments, while a close association is maintained with the medical department, thus giving all patients the benefit of the knowledge and abilities of the various specialists in these departments.

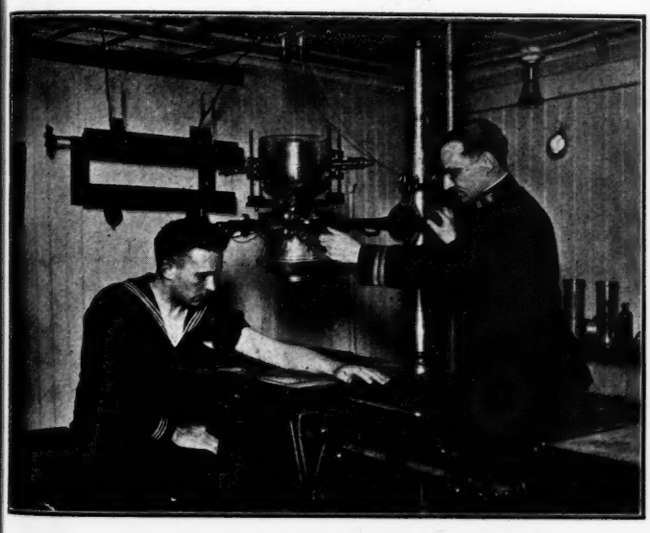
The ward for sick officers contains eight beds and six rooms, the former for the more serious cases requiring constant attention of the nurses, and the rooms for the less seriously ill and convalescent cases. This ward, like all the others, is fitted with every convenience that ingenuity and thoughfulness could dictate. A large and comfortable mess room is provided for the convalescent officers, and a dumbwaiter connects this mess room with the neighborhood of the galley and special diet kitchen on the deck below. The linen room for the general distribution of linen on this deck is situated just abaft these quarters and in this room all of the repairing and distribution of the linen takes place. From this point to the after end of the ship are the contagious disease wards, five in number, with a total capacity of 42 bunks and the possibility of expansion to at least three or four times that number for temporary accommodation. These wards are operated separately and each one is provided with bathroom, toilet and other facilities, while one pantry serves for the distribution of food to the patients, without communication thru the wards, and contains a utensil sterilizer for disinfecting all of the mess gear after use. In the after end of this suite is a room for final scrub-up of all contagious cases, in which they receive their final bath and clean clothes before being discharged from quarantine.

On the after end of this deck is found an enclosed space in the nature of a solarium, which will be utilized for the overflow of contagious cases, and which, when no contagious cases are being housed, can be used for the recreation of convalescent patients from all of the other wards. This solarium will prove a most salutary adjunct to the hospital treatment, as it will enable the patients to live practically in the open air and sunlight and at the same time be protected from all bad weather conditions.

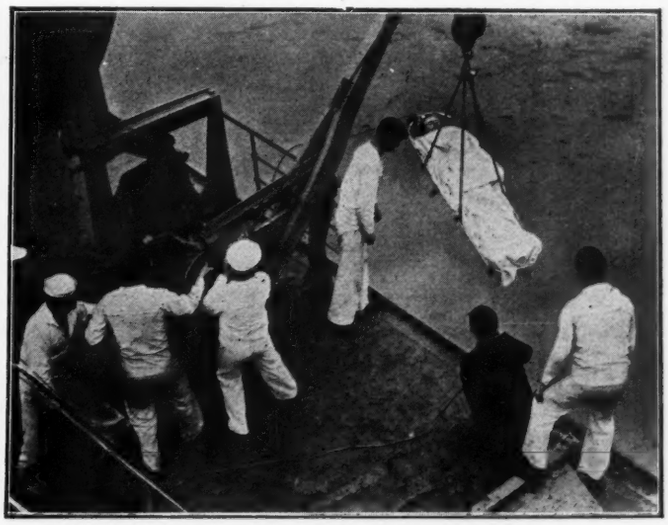
Just abaft the surgical ward, on the starboard side, are the administration offices and the pay office, and next to them the office of the dental surgeon. This room is approximately 12 x 14 feet in size and is equipped with the standard dental outfit provided by the Navy and supplemented by additional instruments and apparatus specially chosen to most efficiently handle the character of cases that will come within the particular province of the Dentist in the Navy. Everything that can be thought of to meet the demands of the service has been provided in this room, and means are at hand for the treatment of oral infections, the surgical treatment of fractures of the maxillae and other operations which may properly come within the scope of the dental function. The office furniture is of white enameled pressed steel, and includes in addition to the regular equipment usually carried aboard ship, an excellent blow-pipe outfit for use in the absence of gas, a vacuum machine machine for casting purposes, a high frequency violet ray, an electric lathe and compressed air apparatus. With this equipment at his disposal the Dental Officer is enabled to perform most of the operations usually restricted to an office ashore.

On the port side opposite the offices just described, and abaft the surgical dressing room, is, first, the diet kitchen, containing electric range, pasteurizing machine, steam cooker, coffee urns, and sink, and is capable of providing special diets for all the wards. Just abaft the diet kitchen is the *x*-ray room, and here we find recognized the importance of the *x*-ray in both general and military surgery and the equipment of this department has been made as complete and perfect as experience and careful selection could devise. The foundation of the installation is the current generator or transformer, which is of the most modern type and of greatest capacity of 12 kilowatts. This has been especially altered so as to adapt it to use aboard ship by the addition of a number of features not required under ordinary hospital conditions ashore. From this can be obtained an output of current far in excess of that required by even the most difficult and rapid radiographyy. The overhead control system of wiring, which conducts the high tension current to all necessary parts of the room, has been constructed with reference to the exigencies of space and arrangement, which installation aboard ship renders necessary, differing in important par-

ticulars from conditions ashore. The table is of the latest "tube built" type, enabling examinations to be made in either the standing or prone position and by means of either plates or the direct view with the fluoroscopic screen. On this table fractures may be reduced, bullets removed, or examination of pathological organs conducted directly by sight by means of the fluoroscopic screen, or a permanent record may be made on plates as required. The accessory apparatus, such as the special eye localizer for locating foreign bodies in the eye, for bullets or shell fragments, by new and rapid methods developed since the beginning of the war, is complete, and plenty of *x*-ray tubes of both the Coolidge and older gas type are provided against breakage due to ship conditions. Every



The X-Ray Laboratory.



Transferring a Patient.

provision has also been made for treatment by means of Roentgen therapy. On the deck below is situated the dark room for the development of plates, together with a special illuminating device for studying them. In but few base hospitals ashore is the *x*-ray equipment as complete or modern and up to the last minute as is found in this department.

Just abaft the *x*-ray room is found the laboratory, with good, natural light and ventilation, and equipment of the latest improved type, well adapted for all required chemical and pathological examinations. Following is a brief résumé of the work possible with our present equipment:

Urine examination, chemical and microscopical; complete chemical and microscopical examinations with bacteria determinations by inoculations or cultures; *Stool examinations,* chemical and microscopical; all ordinary tests with special reference to determination of intestinal parasites, amœbæ or pathogenic bacteria; *Gastric analysis,* chemical and microscopical, and detection of common poisons; *Sputum examinations,* chemical and microscopical, with reference to detection of pathogenic bacteria and their isolation. Throat swab smear examinations and cultures; *Blood examinations,* including the determination of blood urea and blood sugar; complete microscopical examination for determination of blood cell changes or detection of blood parasites; blood cultures for detection of presence of pathogenic bacteria; *Serological examinations;* complete fixation reaction of lues; tuberculosis, and chronic Neisserian infections; agglutination reaction with special reference to determination of immunity; *Examinations of body fluids,* transudates and exudates; bacteriological and cytological diagnosis; spinal fluid examination complete; *Determination of carriers,* typhoid, diphtheria meningitis and virulent pneumonia, micro-organisms with determination of type. *Preparation and standardization* of autogenous vaccines. Pathological diagnosis of tissues.

In connection with this laboratory is an extensive animal house situated on the boat deck and containing compartments for guinea pigs, rabbits, sheep and fowl, all of which are provided and cared for under the best conditions possible.

This brings us to the portion of the ship where the medical officers live, and just abaft this is the medical ward. This strictly medical ward contains 36 beds and is for the use of the active and purely medical bed patients. The light and ventilation are natural and supplemented by artificial light. Everything that is ordinarily found in the medical ward of a hospital is present here, including lavatory, toilet and bathroom facilities, portable

tub for hydro-therapeutic use, diet kitchen, and all its accessories. The accommodations of this ward can easily be expanded and it is flanked on either side by a good, wide, open deck on which convalescent patients may lounge in long chairs and get the benefit of open air and sunshine. Abaft the medical ward is the autopsy room, this being so placed with regard to the patients as to remove all objectionable suggestion of possible unfortunate termination to those who are still in a precarious condition.

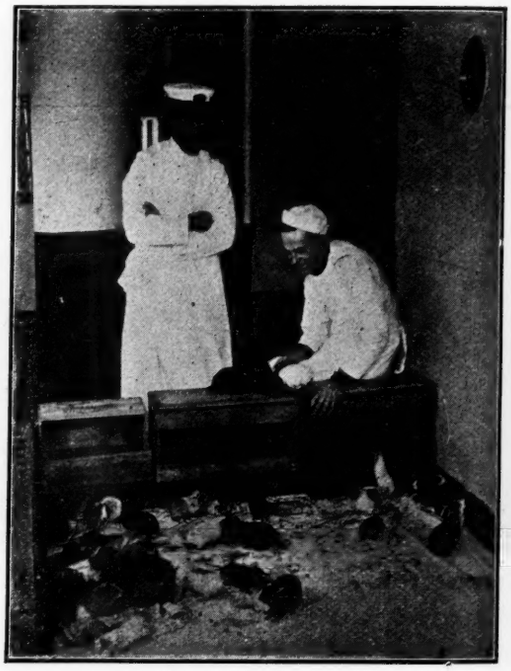
The eye, ear, nose and throat ward is situated forward on the main deck just below the surgical ward, and like all other wards is fitted with the necessary appurtenances for the proper care of the sick. The operating and examining room for this department is completely equipped in every respect and is much more fully supplied than the average specialist's office ashore. All minor operations, as well as special treatments, will be done in this office while under normal conditions; major surgical or minor operations requiring general anesthesia will be performed in the main operating room before described. However, the room is so fitted that, in an emergency, should the general operating room be not available, major operations could be performed in this room. In addition to a most complete supply of every description for eye, ear, nose and throat surgery, the following special appliances are included:

Sweet Eye Magnet, Wappler Cautery controller, Marple-Loring Opthalmoscope, De Zeng Retinoscope, McHardy Perimeter, Eldridge Color Test Lamp, De Zeng Otoscope, Holmes Pharyngoscope, Mueller-Beck ether suction apparatus, and Sorenson Air Compressor; and the following not electric:

Gradle-Schiotz Tonometer, De Zeng Phorometer, and the usual trial case.

At the after end of this deck and immediately under the medical ward is situated the large genito-urinary and convalescent ward which contains 136 bunks arranged in two tiers and is capable of expansion to probably 200. In the after end of this ward is a separate room for venereal treatments. This room is furnished with an instrument cabinet containing all the necessary instruments for genito-urinary work, an electric instrument sterilizer, cystoscopic table, an immersion stand, a Valentine irrigator, instrument table, and stool. This room is complete in every detail and lacks nothing which is essential for diagnosing and treating venereal diseases. It is tiled and along one side of the wall is an irrigating urinal six feet long There is also a lavatory with hot and cold wate with foot pedal control.

This comprises the chief features of the hospita departments proper, but there are many accessorie which are essential to the support of the hospital a well as the upkeep and care of the ship itself. O all these accessories, there is none that can com pare for usefulness and advancement in equipmen of modern hospital ships with the "mechanica cow". This machine is one which has been bu lately put on the market and bids fair to solve the problem of milk supply for the sick on hospita ships when at sea or removed from a base where good milk can be obtained. The milk produced by this machine is made from a combination of un-



Guinea Pig Room.

salted butter and skimmed milk powder, and can be produced with any degree of butter fat required. Cream that will whip is also a product of this machine, and it all tastes like the very best dairy milk and cream that one can get anywhere, and really is so. By means of this machine, 15 gallons of cold, pasteurized milk can be produced in 45 minutes, and if more is required the operation is simply repeated, whereas if an excess amount is produced, it has only to be placed in the milk cans and put in the cold storage room where it will keep indefinitely just as fresh dairy milk will do. As an adjunct to this "mechanical cow", there is an ice cream machine for making ice cream in large quantities, run by electricity and controlled by one man. This machine will make ten gallons at a time, and is for use when large quan-

tities of ice cream are desired, but is supplemented by simple quart and pint freezers for individual diets for the sick.

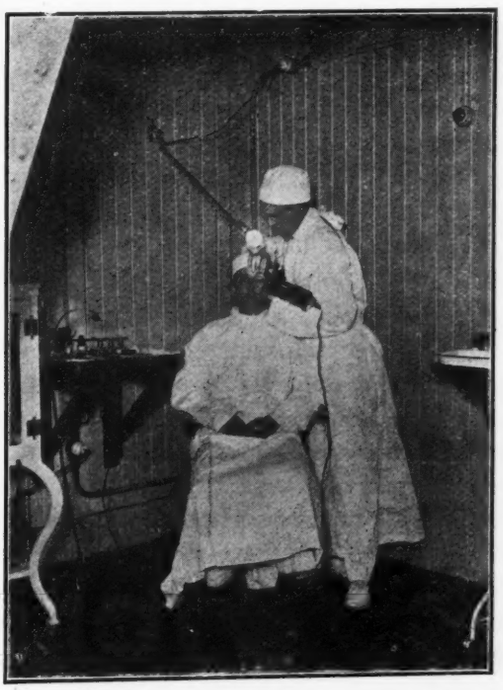
The cold storage plant is large enough to carry fresh provisions for from three to six months, so that the hospital ship is absolutely independent of outside aid for that period at least. In connection with the cold storage plant is a refrigerating machine which will produce, under favorable circumstances, a ton of ice a day, besides furnishing the refrigeration for the cold storage, "mechanical cow", mortuary, and the refrigerating rooms where meats, eggs, milk and other fresh provisions are kept for daily issue up to the amount of one week's supply.

a view to the excessive number of dead under war conditions.

The galley or kitchen and commissary department is under the direct management and control of the Paymaster of the ship and is fully capable of providing foods of any kind, but the special diets, for at least 600 people, containing as it does, all the modern appliances of ranges, steam cookers, electric ovens, coffee urns and bakery, of modern and most approved type.

In the after end of the ship, on the main deck, is situated the laundry, which is equipped with all the best and most modern type of electric laundry machinery, including washers, tumblers, extractors, pressers, mangles, ironers, shapers, dry room, and

Mechanical Cow or Milk Separator.



Ophthalmology Room, Showing Large Magnet.

The distilling plant, consisting of evaporators and distillers, is sufficient to furnish 35 gallons of fresh water a day per capita for 600 people, which will insure plenty of fresh water for the sick and crew for all necessary purposes. Two large disinfectors of the American Sterilizer type are built in at the after end of the contagious wards and are capable of disinfecting large numbers of mattresses, bedding, and even furniture, which may come from the contagious wards.

There is a mortuary where bodies may be stored in cold storage after having been properly embalmed and placed in metal caskets. This department is presided over by a registered undertaker and embalmer, and it is hoped, is far too large to ever be filled, though it has been constructed with all the accessories found in the well-known steam and electric laundries throughout the country.

There are, besides the accessories already mentioned, probably many things that do not occur to the writer as being worthy of note, because they are the things with which we seafaring people are brought up and constantly associated, all of which have their peculiar place in the general upkeep of the ship and its hospital departments. These departments are to be found very generally in all large hospitals, but, of course, on board ship where we are dependent upon ourselves for most of our repair work and minor new construction, they are of much greater proportions than would be necessary ashore. These consist of carpenter shop, machine shop, electric shop, storerooms for dry

provisions, medical and surgical supplies and dozens of other things which readily occur to all those familiar with requirements of hospitals.

Before closing this description, we must look into the subject of the less material side of the care of our patients and see what has been provided for the amusement and recreation of the sick and convalescents, and here we find equal thought has been given and as far as we are able to judge, all of the necessary means of amusement have been provided. There is a moving picture machine and a pianola, the former presented to the ship by a generous contribution from the National Society of the Colonial Dames of America. The films for the "movies", when the ship is anywhere in United States' waters,, are provided by the ever present and most useful and generous Y. M. C. A., while the generous supply of records for the pianola came from the welfare and athletic funds of the Fleet. There are a number of victrolas which were presented through the American Red Cross by the generous contributions from thoughtful people in New York, interested in the happiness and pleasures of the sick.

The government has supplied a good fiction library, the books of which are at the disposal of the men, and this library has been supplemented by contributions from various organizations, so that it is ample for the number of people that the ship can carry, though, of course, additions of the latest books will at all times be gratefully received and the books replaced by others as they wear out in use. Some of the larger daily newspapers of New York have already very thoughtfully contributed copies of their daily issues, and associations of war time clubs have signified their intention of subscribing to some of the more popular of the weekly and monthly periodicals. A liberal supply of games for the amusement of those who are confined to their bunks, and are not able to get about the ship, has been furnished by patriotic persons, principally in New York, and more of these will undoubtedly be contributed from time to time as the attention of these persons and societies is drawn to the benefits which may be derived from them, and the opportunities afforded them to contribute for the diversion and healthful exercise of the patients and of the large body of male nurses, members of the hospital corps and crew who attend upon them. Provisions have been made for all of the American athletic games, such as baseball, swimming, boxing, etc., and all hands are encouraged in perfecting themselves in rowing, sailing and swimming.

The spiritual welfare of all hands is looked after by the Chaplain, who, in addition to the religious duties which belong to his profession ashore, has charge of all the amusements and entertainments, and by every possible means tries to provide those healthful and health-giving pleasures which will lead the men into moral ways, and strengthen their steps, which at this time particularly are beset by all manner of pitfalls.

From the above description it will be seen how complete and various and diverse are the provisions of the ship for the care of the sick and the preparation for meeting emergencies, and it is believed that the friends and relatives of those in the service, who are fighting the great fight, will feel more comfortable about their dear ones, should anything happen to them, when they know of the great amount of thought and labor that has been put into the preparation of this hospital ship, where such men will be cared for in time of illness and accident.

This story might be continued at great length and much more might be told of the methods of handling the sick and wounded, the regulations governing even the most minute details of their treatment and care, and the thousand and one things that are necessary for the handling of the ship itself and the various departments under it, all of which are presided over, and the responsibility for the efficiency of which, rests on the shoulders of the Commanding Officer, who, as will be remembered, is a medical officer. But such description would make the account too long and would simply weary the reader. As time goes on and facilities increase, it is hoped that the government will be supplied with a number of ships of this character, so that the men of the naval service will be even better and more carefully looked after, than it has been possible to do in times past.

THE BABY AND THE DRAFT

What has the baby to do with the draft? It is the draft which has pushed the baby to the foreground of attention. Between forty and fifty per cent. of all drafted men are being rejected because of physical defects—more than two-thirds of which are preventable. These facts are causing grave concern throughout the country—they are an indictment of our civilization, of our protection of motherhood and babyhood; they are of grave portent for the future. They make the safeguarding of the baby no longer merely a matter of "humanity," of "charity," of "uplift," but of supreme and national necessity.—*The Social Hygiene Bulletin.*

THE PREVENTION AND TREATMENT OF SURGICAL SHOCK.

JOSEPH F. FOX, M.D., F.A.C.S.
TOLEDO, O.

Considering the large amount that has been written within the past twenty years relative to shock, its pathology, classification and treatment, it is with extreme hesitation that the writer undertakes to attempt to add anything more to the subject.

Different opinions are expressed as to whether the pathology is due to inhibition, exhaustion or paralysis. A difference has also been recorded between shock resulting from accident or surgical trauma and that causesd principally by hemorrhage. It appears to me that there is very little difference, if any, between shock that may be produced by a railroad wreck or a long and difficult surgical procedure. In both instances there would be more or less trauma and some loss of blood; in the one there would be an addition of some depressing effect due to the anesthesia, or from a condition of shock which is caused mainly by a loss of blood, as in a case of placenta previa or a ruptured tubal pregnancy.

Another reason for hesitation in writing on this subject is that all the writer has to offer is almost at indirect variance with the principal teaching at the present time.

In order that we may reach a starting point, in briefly reviewing the work done along a certain line, let it be understood and agreed that the term shock, as it will be used by me is to apply to and mean any condition of shock, produced by whatever cause possible.

Early in my surgical career it became a fixed custom to study very carefully the therapeutic effects of all drugs administered in connection with surgical cases. It was soon discovered that after a dose of strychnin was administered, the patient would breathe better and the pulse would be stronger; this condition would last from one-half to one hour. Later, when another dose was given, this condition of improvement was again present and would be even better and last longer. The problem that now presented itself for solution was, how frequently could strychnin be repeated with safety? I decided to disregard the therapeutic dose and effect, and to watch for the physiologic effect of the drug.

Strychnin therefore was administered more frequently in all cases of shock. By increasing experience it was noticed that strychnin seemed to have a far better effect in the treatment of shock than any of the remedies usually recommended; under its use the pulse became stronger and less frequent; the moist and perspiring skin became dry and warm; a restless, sighing patient became quiet with respirations regular and deeper.

The drug was carefully studied and was administered in larger doses, while constantly on the alert to detect the slightest manifestation of a physiological effect. The textbook dose, in numerous instances, was far overstepped, with no poisonous or ill effect; on the contrary, the patients made a rapid convalescence, and the day following a severe operation seemed to be almost in a normal state, so far as their circulation and general condition were concerned.

The large doses of strychnin that were finally reached in this series of tests, without ill effects, convinced me that in shock there is a tolerance or rather an indication for strychnin and that the size of the normal or effective dose can only be based upon the degree of shock in each individual case.

Much experimental work has been done in the physiological laboratory in testing out remedies in the treatment of shock. It is a well recognized fact that certain drugs act differently on animals than they do on the man. The dog, for instance, is easily thrown into convulsions by strychnin, but will take an abnormally large dose of opium or morphine, with no more inconvenience or injury than being put into a sound sleep for a few hours. The pigeon can be fed exceedingly large doses of strychnin with impunity.

Dr. S. O. L. Potter, writing in Foster's *"Practical Therapeutics,"* makes the statement that strychnin acts in different degrees on animals than it does on man; birds and guinea pigs were comparatively insusceptible to it. M. Ricket, quoted by Blyth in his work on *"Poisons,"* reports results from a series of experiments in which even a comparatively small dose of strychnin, injected beneath the skin or into a vein of the dog, would in a few seconds bring on tetanic convulsions, and the attack would prove fatal if the dog were allowed to be quiet; if artificial respiration is employed promptly, the convulsions disappear, and the heart assumes its regular rhythm.

One would hardly be justified in condemning a remedy as being unworthy of a trial, and even as injurious in the treatment of a specific condition in man, merely becauses it fails to act satisfactorily in an experimental test on one of the lower animals.

Dr. Eisendrath, in his second edition of *Surgical Diagnosis,* has this to say in the diagnosis of shock: "The chief symptoms of postoperative shock are the same as those of shock following injury. These are (a) marked pallor and coldness of the skin and visible mucous membranes, accompanied by a slight

tinge of cyanosis; (b) a small, irregular and rapid pulse; (c) a stuporous or apathetic appearance of the patient."

If a patient has just undergone a serious or prolonged surgical operation, or has been the victim of a severe accident, and has a weak and rapid pulse, together with a pale countenance, a cold and perspiring skin, with a mental and physical weakness, he is obviously in a condition of shock.

For practical purposes the condition of the pulse and the skin furnish a very accurate idea as to the degree of shock present, providing these conditions are taken into careful and intelligent consideration. They may vary from a pulse which is moderately weak and frequent, with a skin cold but dry, to a pulse so weak and frequent that it cannot be counted at the wrist and the skin dripping wet with a cold perspiration. Of course, an apparatus to measure the blood pressure would furnish accurate information as to the amount of shock in each instance.

Much of operative work until the last few years was under chloroform anesthesia. When the patient did not take the chloroform well, when the heart was depressed or the breathing in particular was bad, a moderate sized dose of strychnin, as 1/30 gr., was administered, as soon as the disturbance was detected, with the most satisfactory effects. I refer more particularly to mild surgical cases, or to the severe cases before the operation was commenced, when no shock was present, save the depressing effect of the chloroform; under the above treatment shock was entirely prevented. In the large number of chloroform anesthesias, aided by this precaution, that have been administered for me, I have not observed any injurious effects directly traceable to the anesthetic.

It was this very agreeable effect of strychnin when administered early in the course of an operation that first led me to use it to antagonize or prevent shock. A large series of cases have been treated in this manner and the results recorded. The amount of strychnin administered depended entirely upon the condition of the patient and also the severity of the surgical work required. Some received a small dose and others one that was much larger; but in all instances it was administered early, that is to say, usually about the time operation was commenced. In some cases, if the patient manifested any unfavorable symptoms before anesthesia was complete, it would be administered at once. The effect was very noticeable and most agreeable; breathing was better, pulse stronger, cyanosis less; in short, the operation and convalescence seemed much smoother and more satisfactory. Strychnin should not be administered to a patient free from shock, prior to the commencing of the anesthetic, even if the case is to undergo a severe surgical operation; if shock is present from trauma or hemorrhage, then it should be administered at once.

After a time when this method was more fully worked out, it became a custom in the operating room to watch most carefully for the cardinal symptoms of shock. At the slightest indication of a rising pulse with a cool, moist skin, a hypodermic injection of strychnin was promptly administered; this dose would be repeated in ten or fifteen minutes if the patient's condition was not improving in a satisfactory manner.

It might be stated in this connection that a hypodermic injection is taken into the circulation much more rapidly than is supposed, even in cases where the patient is in considerable shock and apparently has a poor circulation. In experiments made by M. Richet—quoted by Blyth—a solution of strychnin injected subcutaneously acted in fourteen seconds. The writer has frequently observed very decided effects of strychnin, injected by the needle into patients suffering from severe shock, within three to five minutes. The injections were usually made somewhere over the chest or shoulder upon the supposition that they would be taken up more readily.

A marked contrast would be noticed, if one were to compare the hospital records for the first twenty-four to forty-eight hours, of a series of operated cases where strychnin was used intelligently, as indicated, with the aim of preventing shock, with a series of similar operative procedure where every other method recommended to relieve shock had been employed without, however, giving any strychnin. The record of the one series would show a full and strong pulse many times near the normal mark, with a dry and warm skin, showing that reaction had fully set in; the other would show a weak pulse ranging from 110 to 120 or even 130, with frequently a record that the patient had been restless and perspiring.

After years of study and investigation along the line of the prevention and treatment of shock, it occurred to me that there was more to be done than merely raising the blood pressure. After all, the low blood pressure appears to be merely a symptom of shock, as is the small and rapid pulse, the cold and perspiring skin, the great muscular weakness, the mental apathy and, at times, a low delirium.

In shock, something has gone wrong with the nervous mechanisms of the system; let this something be what it may—a temporary inhibition or a partial suspension of certain cord centers. It is my

firm belief that in strychnin we have a safe and certain remedy for the relief and cure of this condition. Under its proper administration the weak and frequent pulse becomes stronger and slower. The cold and perspiring skin finally becomes dry and warm. The muscular strength again returns to the patient. The brain becomes clear and its function is once more restored. Strychnin does more than raise the blood pressure; it restores all the other damaged functions as well. The injury of the nervous system is relieved or removed, and gradually these embarrassed functions become normal.

Frequently within a few hours' time a patient may be transformed from a nervous and physical wreck into a rational and thinking being. This cannot be accomplished with a single dose of strychnin, which at times needs to be administered with a free hand. When good results are often observed after a dose of strychnin, one should not wait until the effects are entirely lost, but should be repeated sufficiently frequent, that the effects of repeated doses support each other, stimulating the patient. A good strong pulse and a perfectly rational brain furnish proof positive that the patient is free from shock and that treatment may be discontinued.

In an attempt to prevent shock, the strychnin should be administered soon after the operation is commenced and repeated, if necessary, at the first indication of approaching shock. It should never be administered prior to the administration of the anesthetic. The size and frequency of the dose, in either the treatment or prevention of shock, depends entirely upon the condition of each individual patient.

Differentiation between shock and collapse, two terms frequently used by some writers on this subject, seems rather difficult in some instances. Dr. Mumford in his work, *"Practice of Surgery,"* states concerning the two terms: "In truth, one cannot but feel that such a distinction is artificial, and that, as the words are commonly employed, shock is a state of extreme collapse, or vise versa, if you please."

This treatment of shock with strychnin was employed over two thousand times in various surgical operations; hemorrhages, or accidental traumata, without any abnormal effects of the drug in any case. Not even an idiosyncrasy against the drug was observed.

The method employed was to administer it hypodermically repeatedly until all signs of shock were gone. It has been my constant habit to instruct and train the nurse to watch most carefully and study the conditions of the pulse and skin. Any rise in frequency or weakness in quality of the pulse, together with a commencing coldness or sweating of the skin, means the approaching of more shock, and calls for strychnin, unless the condition can be clearly explained in some other manner. A strong pulse and a dry, warm skin are the only positive indications that the patient is in a good condition. There was not a single case of the so-called delayed shock in my entire series.

In only a very few cases was the physiological effect of strychnin noticed. When shock was severe before the treatment was commenced, as occurs for example with a ruptured tubal pregnancy or a severe injury, the good effect was very slow to manifest itself. Such conditions are indications for the large and frequent dose. Morphine may be added for the pain prior to the operation. Only after frequently repeated doses were administered could any improvement be noticed; when, however, the physiological dose was being approached the improvement of the patient's condition came rapidly, and came to remain. This sudden change, as it might be termed, from a patient in profound shock into an opposite condition, was so marked that one could not fail to notice the apparent similarity in action of morphine to pain, that strychnin bears to shock. It is a well known fact that a moderate sized dose of morphine will give no relief in a case where the pain is terrific. The dosage of morphine must, in a measure, correspond to the degree of pain present. The relation strychnin bears to shock is practically identical to the relation morphine bears to pain in my estimation.

It is truly remarkable what a large dose of strychnin is tolerated by a patient suffering from severe shock without manifesting any physiological effects. The largest dose administered by the writer at one dose was 1/5 of a grain. It is seldom, however, that such large doses are required. It is preferable to use it in doses of 1/15 to 1/30 gr. and repeat in fifteen minutes to one-half hour for several doses, if it is necessary. Later on it need not be repeated oftener than at one to two hours' intervals if needed and should be given in smaller doses. It is a safe prediction, that if several doses of strychnin have been administered close together, and the physiological effect has not appeared within fifteen minutes from the last injection, it will not appear, and another dose can be administered with safety.

In this connection it may be stated, if mild physiological effects of the drug should be manifested by light muscular twitchings of the extremities, which occur every two to three minutes, usually nothing need to be done, except to watch the patient closely; in one-half hour's time they usually will have disappeared.

The most marked physiological effects noted oc-

curred in a woman with a ruptured tubal pregnancy. The patient was regarded as dying. One-eighth gr. of strychnin was administered promptly and she was operated upon as quickly as possible. In all she received 1/2 gr. of strychnin hypodermically within a period of about five hours. Two hours after the operation moderate strychnin convulsions developed and occurred every three to five minutes. Ten grains of Chloral Hydrate and Bromide of Soda, given by rectum, soon controlled the convulsions and patient made a splendid recovery.

Hypodermoclysis of saline solution is a great aid in the treatment of shock where there is a great loss of blood, to aid in restoring the normal volume of fluid in the circulatory system.

During recent years expert operators see much less shock manifested. It has been my habit, in nearly all cases, to administer 1/30 gr. strychnin when the patient is nearly under the anesthetic. The reaction is much better while undergoing the operation, the small danger due to the administration of an anesthetic is greatly decreased or removed.

In conclusion, since the surgical profession is so much divided as to the merits of strychnin in the treatment of shock, I would respectfully ask the surgeons to try this treatment thoroughly in their practice. In an ordinary laparotomy, when the patient has been considerably reduced in her health and strength, if 1/30 gr. of strychnin is given at the beginning of the operation and repeated near its close, the rapid convalescence of the patient is insured. Let it be settled, if possible, for all time, whether this drug is of any value in the treatment of shock. The mistake in the past has been that in the severe cases of shock an insufficient amount of strychnin has been administered to meet the indication. The work of Alonzo Clark should be remembered, when he taught the medical world that heroic doses of morphine were necessary to meet the demands of a severe general peritonitis. For such condition the therapeutic dose of morphine is useless; one must establish the physiological dose. In a severe case of shock the conditions are similar; strychnin must be administered until the physiological dose attains the desired effect or some contra-indication arises.

WASSERMANN RELIABILITY.

1. Depending on the antigen employed, the Wassermann reaction in the living patient, as carried out at Bellevue Hospital, gives a negative result in from 31 to 56 per cent. of cases

2. The Wassermann reaction in the living patient is positive in at least 30 per cent. of cases in which it is not possible to demonstrate any of the anatomic lesions of syphilis at necropsy.—D. SYMME, M. D., *in The Journal of the American Medical Association.*

MORULAR OVARIAN NEOPLASMS; THE SO-CALLED OVARIAN DERMOID CYSTS; A BRIEF LITERARY REVIEW, INCLUDING THE REPORT OF A CASE.

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(*Continued from May issue.*)

White reports the case of a post-peritoneal morular tumor accompanying appendicitis in a boy four years old. A "lump" had been discovered in the right abdominal quadrant five weeks previously. The cyst contained putty-like material mixed with hair and pus: a rudimentary premaxillary bone with four fairly well-formed incisor teeth and an upper lip; also a piece of amorphous bone the size of a chestnut. "The origin of this cyst is interesting as it is hard to explain, there being no viscus in this part of the body originating from the epiblast." (White.)

In a case recorded by Harris, the patient was a girl five years and ten months old. Development of the ovarian tumor was associated with the beginning of puberty at five years with rapid bodily growth. The tumor was a complex cysto-solid teratoma with definite adeno-carcinomatous areas. No menstruation since removal of the tumor and no further precocious growth. The first menstrual period appeared when the patient was five years old; the second began two months later and was followed at regular intervals of four weeks by five other periods; each lasted one week and was accompanied by profuse discharge and pain in the lower abdomen. The physical changes usually observed at puberty were noted soon after the first menstrual period. The breasts grew larger, the aereolæ darkened, and the whole body developed rapidly. Growth of the tumor was well advanced by the third menstrual period, seven months before operation, when its presence was discovered by the family physician. There was no discoverable recurrence thirty months after the operation.

A somewhat similar example is reported by Cattermole in a girl of five who developed sudden pain in the right abdomen and groin. Physical findings: rigidity of right rectus and temperature of 99° F. Several enemata induced relief, and the temperature fell to normal. The next day an ovoid tumor was discovered in the midline. The temperature was then 99.6° F., pulse 100. An enema was followed by expulsion of

gas and feces and vomiting of bile. That afternoon the temperature rose to 100.6° F., pulse 110; urine s. g. 1012; no albumen. Diagnosis: abdominal tumor causing partial fecal obstruction. Celiotomy disclosed considerable dark fluid in peritoneal cavity; orange-sized tumor easily delivered; it was dark red in color and attached by pedicle to right ovary. The pedicle was twice twisted. Tumor contents bone, hair and several cysts, the latter containing bloody serum.

O'Shansky states that two months after an attack of typhoid fever a female of twenty-one noted an abdominal tumor, and was operated upon one month thereafter. A large right ovarian cyst was aspirated and two quarts of thin pus evacuated; a few strands of hair were attached to the canula on removal. The pedicle was ligated and the tumor removed. On bacteriological examination a smear showed a gram-negative bacillus. The growth showed a gram-negative bacillus in pure culture which did not produce gas in sugar media, did not liquify gelatin, and did not coagulate milk. Pathological examination after fixation revealed a growth 15x15x11 cm. in its largest diameters. When the cyst was opened a quantity of grayish liquid containing fat-like substance such as commonly found in "dermoid" cysts was noted, and masses of this fatty material containing hair were removed. At one portion where the wall was thickest there was a tuft of hair growing therefrom; at another there was a short nipple-like projection somewhat calcified.

Cleland mentions a "dermoid" cyst with a small imbedded mass having the naked eye appearance of thyroid tissue, which microscopically showed typical characteristics of that gland. In another case the cyst contained fatty material, hair, sebaceous glands, two perfect incisors, a bicuspid, and two masses irregularly placed probably representing unerupted molars. Through a mass of cancellous bone and muscular tissue a laterally compressed smooth-lined cavity extended backward divided by a partition (nasal cavities?). From the outer wall on one side projected mesially a rounded fold (turbinated bone?). Above was a fatty mass with a broad strand of nervous tissue loosely adherent to underlying structures, to which was attached a small cyst containing light yellow fluid not reducing Fehlinx's solution but slightly altering its color. Sections of the nervous tissues showed a granular matrix with fairly numerous small (neuroglia?) cells and vessels; there were also a few large (cortical?) cells and concentric bodies (corpora amylacea?). In one area was a large mass of melanin granules surrounded by fibrous tissue.

Vaccari collected from the literature of the world one hundred and thirty-two examples of bilateral "dermoid" cysts from 1875 to 1910, and estimated that both ovaries were involved in fourteen per cent of all cases. In the majority of instances there was a history of leucorrhea, dysmenorrhea, metrorrhagia and menstrual irregularities, especially as to the duration and quantity of the discharge. In eighty per cent the cysts were markedly unequal in size. The symptoms were attributable to: (a) compression, (b) adhesions, (c) ascites (rare), (d) torsion of the pedicle (fourteen per cent), (e) suppuration, and (f) carcinomatous degeneration. In the greater proportion of cases the anteoperative diagnosis was "cystic ovaries, bilateral salpingitis, or multiple uterine fibroids." Two cases are mentioned in which the *x*-ray revealed the nature of the cysts. Vaccari concludes:

(1) The occurrence of bilateral ovarian "dermoid" cysts is not rare.

(2) Such cysts cause relatively few menstrual disturbances; there is rarely premature amenorrhea or typical metrorrhagia after the menopause.

(3) Sterility is infrequent and conception may take place.

(4) Complications which are common to cysts in general, such as twisting of pedicle, adhesions, suppurations, etc., as well as painful symptoms, are more marked in bilateral than in single cysts.

(5) Even in double "dermoid" cysts, ascites is rare.

(6) The diagnosis of bilaterality although difficult is not impossible; "dermoid" cysts may simulate salpingitis, ovario-salpingitis, or multiple uterine fibroids.

(7) The finding throughout the abdominal cavity of "dermoid" cysts of various sizes, and having the type and shape of metastases, suggests that "dermoids" may not be benign tumors.

(8) Carcinomatous degeneration is rare in bilateral cysts and very exceptionally involves both tumors.

(9) In every operation for "dermoid" cyst of one ovary, the opposite ovary should be examined before closing the abdomen.

Quiet recently Barkley and Herring reported

a bilateral case where the large right cyst occupied almost the entire abdominal cavity, crowding left cyst and viscera into small space. Patient aged twenty-six, married at sixteen, one living child aged nine, miscarriage at seven months eight years ago, no pregnancy since. Menstruation began at eleven, duration two days, scanty, painless. Two months amenorrhea three years ago followed by abdominal enlargment and edema of feet; later menstruated ten days, headache and abdominal pain. Few days thereafter vaginal extrusion several "pieces of flesh" with foul discharge. Next period normal, then amenorrhea two months; pelvic tumor noted about that time. Prolonged illness first was diagnosed as malaria, later as typhoid fever; menstruation at first continuous, then ceased for year. Celiotomy: right cyst contained one and half gallons milky white thick fluid, large tuft brown hair and five or six teeth. Left cyst size of egg filled with hair and teeth. Microscope showed connective tissue surrounded by layer of cells, mostly mononuclear, other sections with hyaline change, few pigmented cells and embryonic muscle fibers; hair, sebaceous glands, squamous epithelium and voluntary muscle with brown atrophy, osseous tissue, etc.

A similar case is recorded by Holmes in a woman of twenty-seven, married ten months. Miscarriage three months after marriage; she stated "the doctor had great difficulty in removing the products of conception." Appendicectomy shortly before marriage when she was told normal left adnexa was palpated. Following a fall three years ago pain in right inguinal region between menstrual periods. Since marriage increased pain and backache. Large right pelvic tumor pushed uterus to left; smaller tumor left side. Right tumor presented appearance of large multilocular ovarian cyst which proved to be "dermoid;" no adhesions. Left tumor showed small area apparently normal ovarian structure and resection was attempted. Cyst wall so thin and friable a few drops of the semi-fluid contents contaminated abdominal incision, and left ovary was then completely removed. Sixth day fetid pus escaped; colon bacillus infection. "That one of the tumors should have been a multilocular dermoid is unusual in my experience." (Holmes.)

Doyle cites the case of a primipara upon whom he operated for ovarian tumor with twisted pedicle and acute appendicitis, complicated by pregnancy. History of abdominal pain since age of nine. Menstruation began at sixteen, eighteen-day type, three days' duration, severe premenstrual and comenstrual pain. Acute appendicitis at fifth month of utero-gestation; examination unsatisfactory because of intense pain. Celiotomy: ovarian tumor with two twists in pedicle; acutely inflamed appendix adherent posteriorly. Tumor four inches in diameter contained sebaceous material, six teeth and some hair; numerous hemorrhagic areas. Pregnancy uninterrupted, patient giving birth to normal living child at term.

Perhaps the most curious of the morular ovarian neoplasms is represented by the so-called "moth ball" type. Ward mentions the successful removal of such a cyst weighing thirty pounds from a woman of thirty-two, the mother of two children aged ten and twelve. The tumor was first noted several years previously. "The unusual feature in this case was the nature of the contents of the sac. There was a large quantity of long, straight hair growing from the cyst wall and an equal amount of loose hair in short pieces floating through the tumor contents, a portion of which formed nuclei for what were called 'moth balls' of which there were about one and a half gallons. These balls or marbles varied from the size of moth balls, as manufactured and sold by druggists, to that of small walnuts. They seemed to be composed of sebaceous matter, and were evidently formed around the short hairs by the motion of the fluid produced by walking or riding. There was some tissue resembling true skin attached to the inner wall of the sac." (Ward.)

According to McMeans the study of "dermoid" cysts and their contents is interesting and rather perplexing;—perplexing in that the nature of the material within the cyst is at times very different and may be found aggregated into small ball-like masses, each ball being separate and not tending to adhere to its fellows. The occurrence of these individual balls has been difficult of explanation, and at present there is little definite information on the subject. A case reported by this author is so interesting that it is abstracted somewhat at length:

The patient was a female of forty-nine and dated her ill health from four years after miscarriage which occurred thirty years previously, at which time her uterus was curetted. She suffered repeated attacks of severe pain in right flank radiating upward to the chest. Pain and asthmatic manifestations gradually increased. Last menstruation exceedingly profuse; no leu-

corrhea; general "bearing down" pains and backache with frequent desire to urinate. Celiotomy: removal of right ovarian cystoma the pedicle of which showed torsion.

Pathologic description: specimen consisted of ovarian mass 20 cm. in diameter. Walls externally smooth, but on palpation gave sensation of irregular thickened areas. Color of serosa milky white with dark areas of congestion. Surface of cyst showed many large vessels radiating from base. Through cyst wall number of small spherical bodies could be felt. When opened cyst found to contain innumerable putty-like concretions, ranging in size from a pea to a marble, and several larger masses of same consistency in which were incorporated many dark brown hairs. Surface of smaller masses smooth and uniform yellowish gray color. Many concretions showed flat surfaces or facets, due to close apposition to others, as they completely filled the cyst. There was no free fluid. On section cut surface of balls had homogeneous greasy appearance with a central irregular cleft containing clear brown oily fluid. Larger masses did not show this central structure, but had a central core in which many hairs were matted together. Lining of cyst wall smooth; thickened, pale, pearly areas; some dark slate color. Cut surfaces of these areas had momogeneous cartiloginous appearance.

Sections of the concretions showed no definite structure nor enveloping membrane. The matrix consisted of granular amorphous material in which the "ghosts" of cells could be seen along with irregular, short, thread-like structures, looking not unlike fine hairs.

A comparative examination of the lipoid material in ordinary "dermoids" and of the concretions showed the following:

ORDINARY DERMOID.

1. Material semi-fluid at 37c.
2. Much hair intermixed.
3. Small granular fat particles.
4. Small amount of debris.
5. Squames, few.
6. Cholesterin (chemically).
7. Double refractive bodies present in great numbers.
8. No inflammatory cells.

DERMOID CONCRETIONS.

1. Concretions semi-solid.
2. Few hairs in concretions.
3. Large fat drops.
4. Much debris of cells.
5. Squames, many.
6. Cholesterin (chemically).
7. Double refractive bodies present.
8. Inflammatory cells.

Lapouge reports three cases of carcinoma in ovarian "dermoid" cysts, and summarizes forty others from the literature. The presence of the tumor was known for many years in several of the cases before malignant transformation supervened,—twenty-six years in one instance. He states that when carcinoma develops the course is rapid, death following within six months at the longest. "The malignant transformation had progressed so far in the cases on record before operative treatment was applied that no instance of complete recovery is known. Intervention merely prolonged life a few weeks or months, excepting in one of Tedenat's three cases, in which the patient survived for seven years." Although operative treatment is usually instituted before malignant changes have occurred, the author says "even allowing for this there are over sixty cases on record of cancer in a dermoid cyst of the ovary."

There has been much discussion concerning the infectious nature of the contents of morular ovarian neoplasms, and convincing arguments have been presented upon both side of the question. Nearly every text-book contains the statement that great care should be exercised in removing such tumors to prevent the escape of their contents into the abdominal cavity. According to Senn, rupture of a "dermoid" cyst is oftentimes the cause of fatal peritonitis; in a few instances this accident has been followed by multiple secondary tumors on the peritoneum having a tuft of lanugo-like hair; they are usually about the size of a cherry and occur in clusters or imbedded in adhesions. "In the removal of ovarian dermoids the trocar must be used with caution, as the escape of the contents of the cyst may cause septic peritonitis or dissemination of the tumor by epithelian infection." (Senn.) On the contrary, however, it is claimed by other authors that "the material of a dermoid cannot be considered other than bland. It is nothing but epithelial cells, a little hair, etc., and why that should lead to inflammatory reaction is not readily seen." Ries states "from what we know of rupture of dermoid cysts spontaneously or accidentally without operation, we could not assume that the contents of the cyst led to suppuration of the tissues." Many cases of this character have been operated upon where rupture had occurred and there were particles of "grumous stuff and hair" surrounded or encapsulated by omentum without further intra-abdominal disturbance. "In attempting to conserve a portion of the ovary it not infrequently happens that there is escape of dermoid tissue into the cavity without infection."

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RESULTS OBTAINED IN SEVENTEEN CASES OF HOURGLASS STOMACH BY OPERATION.*

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The observations set forth in this paper are based upon the operative results obtained with seventeen patients having an hourglass contraction of the stomach following benign ulcer. I realize fully that this number is far too small to justify positive statements, but the fact that fifteen of them have been observed for an average period of two and one-half years after operation, and one for more than nine years, at least permits an opinion as to the comparative value of the various operative procedures employed. There were sixteen females and one male in the series. The average age was thirty-nine years. There was one operative death—the seventeenth patient dying from pneumonia—on the sixth day after medio-gastric resection.

Before the Roentgen-ray came into general use as an aid to the diagnosis of stomach lesions, hourglass contraction was considered to be somewhat of a novelty and was usually discovered after the abdomen had been opened. The various means at our disposal prior to the advent of the bismuth meal, such as distending the pouches with gases, lavage, etc., occasionally suggested such a deformity of the stomach, but a positive diagnosis could rarely be made. Well taken radiograms not only established the diagnosis at once, but give a fairly accurate idea as to the relative size and shape of the pouches, the width of the channel connecting them, and the condition of the pylorus. This information gained beforehand is of great assistance to the surgeon in determining the best suited operative procedure.

The one absolute requirement of any operation employed in the treatment of hourglass contraction is that the symptoms due to obstruction be relieved. If at the same time the procedure adopted can include excision of the ulcer or the cicatrix of a healed ulcer, without too great a risk, so much the better; but it must be remembered that the great majority of these patients come to us on account of weakness due to inability to take or retain sufficient food. Pain has become an old story with them, and in many instances causes little alarm until vomiting and loss of weight appear. A severe hemorrhage was the immediate cause of one of our patients coming to the hospital. This was the only instance in which there was bleeding of any consequence.

At least four operative procedures—gastroenterostomy, gastroplasty, gastrogastrostomy and medio-gastric resection or resection in continuity—are available in the treatment of hourglass contraction. To these pylorectomy should be added as the method to be adopted if the constriction is near the pylorus, thus forming a small distal pouch. We have had no case of simple stricture in which the latter operation seemed to be indicated, and for this reason are not in a position to discuss its merits.

Gastroenterostomy is the operation most generally used for the relief of this condition. This procedure alone was employed six times, and once was combined with gastroplasty. It is hardly necessary to state that as a rule the intestine should be anastomosed to the cardiac pouch. As an exception I can cite an instance when the constriction occupied the middle third of the stomach, and was caused to a large extent by perigastric adhesions. There was marked infiltration of the walls of both pouches, proved subsequently to be syphilitic, with a large retention in the lower pouch and no retention in the upper. After the channel connecting

* Read before the New York and New England Association of Railway Surgeons, November 8th, 1917.

the pouches had been sufficiently freed to admit three fingers the gastroenterostomy was made to the pyloric pouch. The after-history of this patient is interesting in that she died one and one-half years later of a generalized syphilis—all symptoms referable to the stomach had been entirely relieved.

Failure to note stenosis at the pylorus once necessitated a second operation to relieve stasis in the pyloric pouch. With this exception the results following gastroenterostomy have been satisfactory in every way. This operation is indicated when the constricted area is of wide extent, and when adhesions prevent mobilization of both pouches.

Gastroplasty has a limited field in the treatment of hourglass contraction, due to the fact that it is suitable only when the pouches are movable, their walls free from induration, and the constricted area narrow. It is simple, easy to perform, and permits direct inspection of the interior of the stomach, thus affording an opportunity for treating an active ulcer by excision or cautery application. It may be combined with pyloroplasty or gastroenterostomy if the pylorus is stenosed. Four patients were operated upon this method. In one the cautery was applied to the ulcer and gastroenterostomy added, and in two the ulcer was excised and in the fourth gastroplasty was combined with pyloroplasty after simple gastroenterostomy had proved unsatisfactory. It is interesting to note, that at the second operation, on this patient, the stomach-wall, which had been indurated at the first had become soft and pliable so that the plastic operation was done with great ease. The end results in this group have been most satisfactory, although in one the hourglass deformity, to a certain extent, persists to the present time, three and one-half years after operation.

Gastrogastrostomy is especially adapted when the stomach is adherent along its lesser curvature to the liver, when the pouches are relatively large, nearly equal in size, and can be approximated at their dependent portions. The stomach-wall should be free from induration at the site selected for the anastomosis. The pylorus must be patent otherwise pyloroplasty or gastroenterostomy will have to be added. Gastrogastrostomy was performed three times in this series with complete clinical recovery in each instance. One of these patients has been followed for nearly nine years.

Medio-gastric resection or resection in continuity is the ideal operation for hourglass deformity of the stomach, provided the pylorus is not stenosed, and should be performed under such conditions. The ulcerated area, active or quiescent, as well as the constricted portion of the stomach-wall is removed by this method. The end results obtained demonstrate the value of this procedure. Unfortunately, it is limited to the patients with few adhesions when the pouches are fairly large, and permit of free mobilization. It is a longer and somewhat more difficult operation to perform than those already mentioned, and for this reason, if the patient is in poor condition, should not be given preference over them. In order to overcome the tendency for the constriction to persist after resection in continuity a wide excision should be made. The radiograph of one patient taken subsequent to operation, illustrates the necessity of bearing this point in mind. Mid-gastric resection was the method adopted for five patients. Three perfect results seem to have been obtained; one patient has worked continuously as a domestic for over three years; another for two and one-half years; and the third operated on eight months ago has gained twenty pounds in weight. All symptoms referable to the stomach have disappeared. The fourth patient referred to above, in which the radiograph shows a persistence of the deformity, continues to have some distress in her stomach after meals although there has been no vomiting. She has gained in weight and has continued her work. The fifth died of pneumonia on the sixth day after operation. This patient was not in good condition and a less severe operation should have been performed.

The fifteen patients of this series surviving to the present time have been examined and checked by radiographs during the past few weeks. All have gained in weight, and with the one exception noted are practically free from the symptoms for which they sought relief.

The radiographs taken at considerable periods of time after operation demonstrate very clearly that the various methods employed have met the prime indication, that is, have overcome the obstruction. Whether the result obtained will be permanent in every case remains to be seen, but certainly some of each group have been followed sufficiently long to warrant the claim that a cure has been effected. From a study of the clinical results, I have come to the conclusion that each of the four operative procedures, above mentioned, gives equally good results provided the correct one is applied according to indications, and is executed in a proper manner.

I take this occasion to express my obligation to Dr. L. T. Le Wald, Radiologist to St. Luke's Hospital, through whose assistance and co-operation this report has been made possible.

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WALTER M. BRICKNER, M.D., F.A.C.S., Editor

NEW YORK, JUNE, 1918.

JOINT SURGERY

We have always considered infection of joints as one of the most fruitful problems for surgical study. There is scarcely a phase of the problem concerning which opinion has even reasonably settled; the pathology. The effect of lesions of the various component parts of the joint upon end function. The diagnosis, especially in relation to the utility of diagnostic puncture and, above all, therapy. Witness, for instance, even in the most recent years, how rapidly our therapeutic notions, concerning the treatment of infected joints, has fluctuated. First, we had "button hole" through and through, and long continued drainage, ending almost invariably (if the patient's life was spared) in firm ankylosis. Then came the wide mutilating open Mayo operations, which gave a lower mortality, but left the joint in even a firmer ankylosis. Then followed the injection procedures of Murphy which, while occasionally followed by brilliant results, not infrequently ended disastrously. The present status of the treatment of joint infections is in anything but a crystallized state, but it is hoped that the numerous opportunities furnished by this war will enable us to utter fairly definite convictions upon this subject. Our thoughts reverted to this topic in reading the unusually clear and well written paper of Eloesser (Boston Medical and Surgical Journal, April 25, 1918), based on an extensive and keenly observed experience during the present war.

Eloesser starts out with the pregnant remark that the difficulties in treatment are largely mechanical; a joint is not a cavity but a series of more or less intercommunicating cavities. Furthermore, he makes a very apt comparison between the analogy of a joint and of the peritoneal cavity, and shows that we must regard the endothelial lining of the joint with the same respect as we have learned to deal with the endothelium of the peritoneal cavity. Eloesser classifies the sources of infection of a joint into four types: 1. Direct, by means of a missile; 2. Indirect, through a fissure in the bone; 3. Secondary, by spread of a neighboring suppuration; 4. Metastatic. The recognition of these various modes of infection is highly important, not only from a theoretical, but from a practical viewpoint. It is obvious, for instance, that if there is direct infections from without, the offending material must be removed as soon as possible. If there is, on the other hand, indirect infections from communicating bursae or joint fractures, the primary focus must be treated; resect, if necessary; resect prophylactically if manifestly infected. The third type—secondary indirect infection from neighboring abscesses—is fortunately rare. The dominant principle in this form of infection is to leave the joint alone unless it is surely involved. For metastatic infections, the indication is simple: evacuate the pus.

Whatever the origin of those infections, all may lead to similar pathological lesions. It is important, however, to recognize two distinct groups. The first is the suppurative form without deep involvement of the joint capsule; the second, the dry form, in which the capsule has become phlegmonous. "The whole future of the joint depends whether it is to be movable or permanently stiff and crippled, depends on whether the capsule is deeply involved or not—whether the bacteria are merely in the joint cavity or whether they have wandered out of the cavity and infiltrated the capsule."

We now come to Eloesser's method of handling a joint containing frank pus—a joint empyema. After removal of the foreign body, the pus is drained off; *the joint, however, should not be left open.* Here again, Eloesser argues that the treatment of a pus joint should conform to the principles which we have learned in treating a peritonitis. The now well-established dictum, "Allow the peritoneum to take care of itself,"

should be applied to the treatment of prevalent infections of a joint. We have long ago learned that if the cause of a peritonitis is removed, no extensive drainage or irrigations are necessary. So with a joint. "If it is kept open, exposed to the air or covered with gauze, both synovia and cartilage are lost—and the joint obliterates." Therefore, Eloesser recommends, let the pus out through a small stab, leave in a small drain until the pus disappears, and the discharge becomes serous. The drain is then removed and the joint allowed to close up spontaneously. Distension of the joint frequently ensues, and the patient may even run a fever. This, however, should not alarm the surgeon; the fever subsides in a few days and at the same time the swelling may recede. Eloesser is not positive as to whether irrigations are necessary or not; he believes that probably the Carrel-Dakin solution is the best antiseptic to use.

If the joint is an extensive series of cavities, it is important to recognize which portions are infected and which are not; only those portions that are infected are drained; the others are not, and he emphasizes the importance of not employing any procedures that may carry infection from infected to the non-infected areas.

In discussing the treatment of the second form of infectious arthritis, that associated with a capsular phlegmon (the clinical phenomena of which are set forth by the author in a masterly form), Eloesser says that the treatment is beset by many difficulties. "One will never cease to have patients who, whether they recover or succumb, one would wish to have treated otherwise." In these infections, the primary indication is to save life; the joint is hopelessly lost from the outset. The joint is therefore widely drained, all foci of necrosis and foreign bodies are removed, and the joint is filled or irrigated with the Carrel-Dakin solution. The limb is immobilized and must not be disturbed for unnecessary dressings. Too many are worse than too few. The difficulty is in knowing when amputation is necessary, if we decide too late, the man is lost; if we decide too early, a limb that might have been saved is sacrificed.

The remainder of Eloesser's article contains many specific directions for the treatment of individual joints, which we recommend those specially interested in this topic to read. There is but one other point which we deem sufficiently important to mention; and that is, the advisability of removal of all foreign bodies within the joint, even if they have aseptically healed in. Such foreign bodies are very apt, in time, to cause roughening of the articular surfaces eventually resulting in a chronic deforming arthritis. Lead foreign bodies are particularly dangerous. The lead dissolves in the synovial exudate and settles as a grayish white deposit under the capsule. Such joints develop an uncommonly severe form of hypertrophic arthritis.—E. M.

THE AMERICAN MEDICAL ASSOCIATION

The 69th Annual Session of The American Medical Association will be held in Chicago, June 10-14, 1918. The characteristic enthusiasm of the medical profession undoubtedly will be enhanced because of the fact that war problems will play an important part in the general and sectional meetings. A military meeting, a patriotic war meeting, the presence of hundreds of men in uniform, the discussion of war methods, plans and regulations which are now being tested by practical experience will stimulate feelings of loyalty and patriotism in no uncertain way.

Programs of the sections on general and abdominal surgery, gynecology, orthopedics, etc., present a wealth of material whose meaning is far deeper than had been appreciated previous to our entrance into the war. There is no vast difference between civil surgery and military surgery except for the prodigality of operative work due to war injuries and the increased severity of a considerable proportion of the operations required. Rarely has there been such an opportunity for testing out the worth of surgical methods and technic. The numerous differences of opinions which have developed will approach nearer to harmony as a result of the interchange of opinions and experiences.

The demand for men will meet with a more ready response as a result of this national meeting which will bring to the attention of the profession a greater realization of the part the profession must play in protecting the lives and limbs of the American forces. The Chicago meeting will be largely attended owing to the central place of meeting and the participation in the various programs of representatives of every branch of the federal service together with representatives of the semi-official bodies charged with advancing the medical and surgical organization of the country. Those who attend the sessions will be repaid not merely by the benefits accruing from contact with fellow workers, but

by being placed in an atmosphere of loyal spirit responsive to the needs of the nation. The inspiration of this occasion will react most favorably upon the profession and encourage it to make the greatest sacrifices in behalf of national welfare.

The nation calls upon the profession for volunteers, and while almost 20,000 men have responded to the call, there is now an urgent need for 5,000 more to rally to the colors. The greatest triumph of the national meeting would be the completion of the roster sufficient to satisfy the present national emergency. Patriotism will be the key-note of the Chicago meeting. Words, speeches, applause, the wearing of flags and emblems, the singing of songs, may be evidences of the loyal spirit and a sense of enthusiastic support of governmental policies and play a considerable part in the development of a national morale. Wars require more than morale for their successful waging, and the most vital test of the Americanization of the profession is to be found in the responsiveness of the profession to the opportunity and privilege of donning a uniform and entering into the medical reserve corps.

Every physician and surgeon must ask himself the question: why do I not put my services and ability at the disposal of my government? This question merits a frank, conscientious, and truthful answer by each member of the AMERICAN Medical Association.

BLOOD TRANSFUSION IN MILITARY SURGERY.

The most astonishing thing about this brutal military convulsion which is shaking the world to its very core is the magnificent medical efficiency with which the wounded are being treated. The thin line of combat wavers very little, or not at all, and the facilities of the medical corps have gradually been approximated to those of the fixed community. Methods peculiar to civil life, which seemingly it would be impossible to utilize when the exigencies of warfare demand long marches and frequent and rapid changes of base, have assumed dominant positions in the surgical repertoire; a marvellous saving of life has resulted. One of these new factors is blood transfusion.

Two of the elements which tax skill in managing military wounds are shock and hemorrhage. The number of men who have died from these causes is almost uncountable. What better method than transfusion of blood for combating the loss of blood and for refreshing the exhausted vital centres? A suggestion of the tremendous possibilities of this extraordinarily efficient therapeutic measure has recently been indicated in a report from the British medical services. American medical men engaged in duty abroad will, no doubt, make abundant use of this procedure. American surgery may be proud that the possibility of blood transfusion is due directly to its own ingenuity.—A. O. W.

A CORRECTED STATEMENT.

In the April issue on page 96 an error occurred with reference to the dosage of coagulen. We regret that the word "grains" should have been used in place of the word "grams." The abstractor, however, merely carried over the statement as it appeared in the journal in which the abstracted article originally appeared. The corrected statement should read, "Not more than five grams of the coagulen are to be employed at any time. When administered orally, five to ten grams dissolved in milk or tea."

Surgical Sociology

Ira S. Wile, M.D., Department Editor.

PUBLICITY AND VENEREAL DISEASES.

As a result of military necessity, the Army and Navy have undertaken a broad campaign for the reduction of venereal diseases. Whether the underlying motive be on moral grounds or be based upon the importance of the physical service of a man is immaterial insofar as the end results are concerned. The aim is identical; namely, the protection of our military and naval forces from the inroads of venereal infection.

The Commissioner of Health of the City of New York recently transmitted to the newspapers for publication a statement to the prevalence of venereal diseases, and the intentions of the Health Department to assist the federal authorities in attacking this particular health problem as the foremost issue in its public health program. The newspapers failed to publish the communication. This refusal is indicative of the "conspiracy of silence" which must be broken down before adequate measures can be undertaken to control the evil. The prevalence of syphilis and gonorrhea is not appreciated by the general public and it is doubtful whether the medical profession itself fully recognizes the part that these black plagues play in the general problem of disease prevention.

Figures would indicate that syphilis and gonorrhea are the most prevalent of all infectious diseases whose consequences are responsible for more disease, invalidism, blindness, imbecility, general misery, and social difficulty than any other type of infectious disease ordinarily appearing in the community. Syphilis and gonorrhea rarely appear as causes of death upon death certificates, altho physicians realize that they form a serious factor in occasioning mortality. There is no lack of understanding of the statement of Osler, "of the killing diseases, syphilis comes third or fourth."

Vedder in his recent volume, "Syphilis and Public Health" points out in no uncertain way the dangers of syphilis to the general public. His compilation of statistical material merits most careful consideration. The part that these diseases play in the operative procedures of hospitals needs not to be emphasized to surgeons. Evidence from various sources demonstrates that the occurrence of syphilis among patients in hospitals and dispensaries is of serious moment not merely from the standpoint of the individuals afflicted, but from that of the general public, amongst whom these carriers of venereal disease live and work.

According to Kneeland, of 5380 patients treated in 13 New York hospitals in 1911, 6.33% were venereally infected, and these figures were independent of Wasserman examinations. During 1915 and 1916, 22% of positive reactions were secured in the investigation of pedlars, bakers and foodhandlers, though these figures were possibly a little higher than the community average, being based upon selected cases. The American Dermatological Association, after the study of 300,000 compiled cases, reported syphilis to be a causitive factor in about 11% of them. The autopsies performed at Bellevue during the past ten years gave anatomical confirmation of syphilis in 6.5% of those autopsied. The Wasserman reactions at Bellevue for the year 1915, embracing 9891 routine tests, revealed a positive report in 30.5%. The records of the Post Graduate Hospital of New York for 1916 on unselected white patients covering 1168 males and 746 females show 28.4% positive males, 27.4% positive females. Walker and Haller studying the occurrence of unsuspected syphilis among patients at the Peter Bent Brigham Hospital found 15% complete fixation among the 4,000 patients investigated. In the Boston City Hospital, 500 unselected Wasserman tests by Hornon revealed 17.4% with positive reactions. Rosenberger reported the Wasserman reactions at the Philadelphia General Hospital during 1916 and although patients were not included in his study, 27.4% were reported positive. One might pile up statistical figures indicating the large number of admissions to hospitals and dispensaries for medical and surgical conditions with positive findings.

If to this vast number of luetics there be added the large number of patients seeking surgical relief for gonorrheal infections males and females—one could appreciate to what extent hospital attendance would be decreased by the conquest, partial or complete, of the venereal diseases.

It is essential that there shall be the fullest publicity given as to the exact status of venereal disease infection. It would be distinctly helpful to those charged with the responsibility of directing campaigns against syphilis and gonorrhea to secure the most up-to-date statistical data with reference to the incidence of these two diseases, the results of hospital and dispensary care, the frequency and character of the complications resulting from them, and the general end results of the medical or surgical treatment of the complications or sequelæ. The records of our hospitals and dispensaries are rich with material that would point a moral or adorn a tale to hold the interest of the press and public.

If the medical profession as a whole will get back of the Army and Navy and will support health officials in making known the ravages of venereal diseases, much will be accomplished. If medical societies were to issue demands upon the public press that they cease to talk in terms of concealment of "certain diseases", "social diseases", "blood diseases", terms which cannot be understood unless one is aware that syphilis or gonorrhea is meant, they would be serving the public wisely and well. There is no sound reason why the words syphilis and gonorrhea should not be used in the public prints. The journals which carry the advertisements of alleged medical concerns or individuals, offering their services for the treatment of "private diseases" should begin to realize that these alleged "private diseases" are of the utmost public consequence. The general mass of the population receives most valuable education thru newspapers. It is therefore important that the press be educated up to its duty and responsibility with reference to gonorrhea and syphilis. The

doctors, the surgeons, the hospitals, the dispensaries, have a convincing message which the American people will listen to with chagrin, humiliation, and indignation, when their facts become common property. The profession again, is called upon to serve the public by making known in every way possible the inhumanities of the ravaging venereal monsters, gonorrhea and syphilis.

Any attempt to control the venereal diseases or to limit the social phenomena giving rise to them is dependent upon public opinion. Public opinion can be formulated, organized and directed only on the basis of exact knowledge and information. The main problem today is the development of an intelligent, rationalized, public opinion concerning the prevalence and dangers of gonorrhea and syphilis.

Book Reviews

Modern Urology. In Original Contributions by American Authors. Edited by HUGH CABOT, M.D., F.A.C.S., Chief of the Genito-Urinary Department of the Massachusetts General Hospital; Assistant Professor of Genito-Urinary Surgery in the Harvard Medical School, Boston, Massachusetts. *Volume* 1 *and* 2. Illustrated with 632 Engravings and 17 Plates. LEA & FEBIGER, Philadelphia and New York, 1918. Price, $14.

The rapid development of urological science serves as an adequate reason for the publication of a brief system on the subject. The fact that the contributors are all Americans makes the present two volumes a standard American book of references for those interested in the subject. Volume one, considers diseases of the penis and urethra, scrotum, testicle, prostate and seminal vesicles, while volume two is limited to the discussion of the diseases of the bladder, ureter and kidneys.

Despite the evidence of careful editorial supervision one notes a wonted unevenness which is generally characteristic of works written by a large number of authors with varying points of view and methods of approach. The subject matter being purely urologic, one fails to secure a complete picture of many of the diseases. This is particularly noteworthy in the discussions of gonorrhea and syphilis, which cannot be discussed in their various constitutional manifestations when they are considered in relation to only a single system of the bodily organization. Similarly it is difficult for one desirous of obtaining specific information to be certain of the completeness of the facts contained due to overlapping of discussion, as a result of individual contributors being in a sense partially ignorant of the subject being treated by other contributors. As an illustration of this one might refer to the fact that there is less discussion of syphilis of the bladder in volume two, to which diseases of the bladder belong, than in volume one, in which there is no direct place for the discussion of cystic diseases.

In the general method of organization of the text there is a happy combination of didactic narrative and the case method of presentation, tho apparently a uniform plan was either not proposed to, or not accepted by, all the authors. The group of bibliographies at the end of each chapter is fairly well carried out in plan, and adds very much to the general value of the system to those interested in referring to the original sources. Here again, there is inequality, as for example in volume two, there is only one book on reference for the excellent chapter on Tumors of the Bladder, none at the close of the chapter on Foreign Bodies in the Bladder, while there are fourteen references on Stone in the Bladder and 57 on Tumors of the Kidney.

The choice of specific authors reflects favorably upon the judgment of the editor and indicates the strength of the urological force in this country, altho the profession has not been drawn upon further west than St. Louis, nor further south than Baltimore.

Most of the criticisms above mentioned, at once apparent to the reviewer, were fully recognized by the editor who quite properly states that while these considerations are perhaps objectionable in a work designed for students, they are of less consequence in volumes intended for the assistance of the profession at large. Inasmuch as the editor recognizes that the two volumes practically represent, "a correlated set of monographs," it is only fair to appraise the results of his efforts upon this basis. It must be acknowledged that the contributors have made successful and meritorious contributions which have been carefully and skillfully arranged and compiled without destroying the individualities of any writer. The sum total may be regarded as a satisfactory exposition of urology, as developed and improved by a large number of capable diagnosticians, therapeutists, surgeons, and pathologists, whose experience in genito-urinary work has given them the requisite training and background to speak authoritatively upon the subjects to which their names are appended.

Health by Instruction. An Effort in Favour of a Biologic Teaching. LUIS SUBIRANA, Cirujano-Dentista, Professor of the Dental School of Madrid. English Translation by FRANK J. YOUNGER, D.D.S. Madrid, SOCIEDAD DE ARTES, Fuen-Carral, 137. 1918.

The dedication of this volume to his professional friends and colleagues of the United States was a gracious method of expressing the admiration of the translator for the accomplishments and ideals of his American brethren. In the light of this expression of international courtesy and amity, it is unfortunate that one must record faultiness in the translation. If one were not conscious of reviewing a book dealing with a serious topic, one might fancy that the English was designed to represent a burlesque of the translator's art.

The original work of the author merited a better fate because the language re-translated into Spanish gives evidence of a thoro understanding of the problem he discusses. The subject matter concerns the importance of education and instruction in the relation of teeth to nutrition and health. The text covers satisfactorily the importance of mastication, the effects of malnutrition upon dental structure, the influence of improper feeding upon caries, and the dire effects of caries upon the physical and mental development of individuals and races.

If the translator had had the guidance and counsel of one acquainted with the art of English writing, the value of the book would have been greatly enhanced. Despite the difficulties, however, under which the reader must labor, there are many suggestions of distinct value to those interested in advancing dental hygiene thru systematic and organized education.

Lessons from the Enemy. How Germany Cares for her war disabled. *Medical War Manual No.* 5. Authorized by the Secretary of War and under the Supervision of the Surgeon-General and the Council of National Defense. JOHN R. MCDILL, M.D., F.A.C.S., Major, Medical Reserve Corps, U. S. Army. Illustrated. LEE & FEBIGER, Philadelphia and New York, 1918. Price, $1.50.

Whether in military service or not, the reader of McDill's book will be amply repaid by a careful study of it. No problems are of more significance at the present time than those centering about the care of the war disabled. Intelligent organization takes advantage of knowledge gleaned from every source and to learn from the enemy is an evidence of foresight and sagacity.

Beginning with a concise description of the German medical military organization in war, there follow chapters devoted to the discussion of the administrative methods

of the sanitary service and the method of operation of the military base hospitals in Germany. The most significant chapters from the standpoint of American progress are those devoted to the re-education of the war disabled and the orthopedic hospital schools and workshops. There is a wealth of suggestion in the portion of the book given over to the discussion of artificial limbs or protheses.

The point of view of the author, his attitude of inquiry, interpretation and weighing of methods merit particular commendation. In the present state of mind with reference to war cripples there is a large amount of valuable material carefully compiled and intelligently discussed, which should prove of advantage in perfecting American organization for the care of war cripples. The illustrative material is unusually well selected, and the large number of drawings and reproduced photographs enhance the value of the text. In many ways this war manual is one of the most constructive which has been issued under the authorization of the Secretary of War and the Surgeon-General.

Evolution de la Paie de Guerre. (Evolution of War Wounds.) A. POLICARD, Professeur agrege a la Faculte de Medicine de Lyon. Duodecimo, 191 pages; 49 illustrations. Paris, MASSON ET CIE., 1918.

This volume takes up the description of the biological history of the wounds of the present war beginning with the pathological anatomy of a fresh wound and carrying the healing through to the end. The processes of healing and of infection plus suppuration are very lucidly described. A good description of the bacteriology of the wounds is also given. The mechanism of necrosis and tissue destruction is described as a proteolytic process in which bacterial ferments play an active part. The volume should be very valuable to all military surgeons.

Les Blessures du Cerveau. Formers Cliniques. (Brain Injuries.) CH. CHATEIN, Duodecimo, 199 pages. With a preface by Professeur Pierre Marie. Second edition. Paris, MASSON ET CIE., 1918.

This volume concerns itself with war injuries of the brain—including necessarily some discussion of cranial injuries—and the opening chapter details the methods of a neurological examination including radiography and lumbar puncture. The methods of localizatioon are also outlined. A short description of the symptoms found with any brain injury is first given; and after that the parts of the brain are taken up individually and in detail. The volume ends with rather short discussions of the complications of brain injuries — meningitis and epilepsy. In these war times, when brain injuries are so common, the volume is timely and especially valuable.

Principles of Surgical Nursing. A Guide to Modern Surgical Technic. FREDERICK C. WARNSHUIS, M.D., F.A.C.S., Visiting Surgeon, Butterworth Hospital, Grand Rapids, Michigan; Chief Surgeon, Pere Marquette Railway. Octavo of 277 pages with 255 illustrations. Philadelphia and London. W. B. SAUNDERS COMPANY, 1918. Cloth: $2.50 net.

This most excellent book deserves a place on the shelf of every nurse and doctor, especially for those who must perform operations in private homes either in the city or country. It discusses everything that one needs to know preparing for an operation and for taking care of the patient thereafter. Especially valuable are the chapters devoted to the early postoperative care and to the emergencies which may arise at that time. In preparing for the operation in a private home a number of things, which ordinarily would be considered difficult of accomplishment are made simple and easy by the suggestions of the author.

The book contains a number of very valuable formulae for use, such as those for various plasters and stupes, enemas, douches, etc. The book is enriched and particularized by a description of the duties of the nursing staff in a given operation, and quite rightly the common operation of appendicitis is selected.

Diseases of the Chest and the Principles of Physical Diagnosis. GEORGE WILLIAM NORRIS, A.B., M.D. Assistant Professor of Medicine in the University of Pennsylvania; Visiting Physician to the Pennsylvania Hospital; Assistant Visiting Physician to the University Hospital, and HENRY R. M. LANDIS, A.B., M.D., Assistant Professor of Medicine in the University of Pennsylvania; Director of Clinical and Sociological Departments of the Henry Phipps Institute of the University of Pennsylvania; Visiting Physician to the White Haven Sanatorium. With a Chapter on the ELECTROCARDIOGRAPH IN HEART DISEASE. By EDWARD B. KRUMBHAAR, Ph.D., M.D., Assistant Professor of Research Medicine in the University of Pennsylvania. 782 pages, fully illustrated. W. B. SAUNDERS COMPANY, 1917.

This is a very thorough and complete work on the theory and practical applications of physical diagnosis. The first part of the volume is written by Norris and considers solely the various diagnostic methods—inspection, percussion, palpation and auscultation. Much space and time are devoted to the underlying physical understanding of the art of physical diagnosis—thus, for example, acoustics as it has its role in medicine, is admirably presented and discussed. The chapter on normal variations of pulmonary percussion sounds is replete with helpful hints and cautions to avoid error. Particularly fine also are chapters on auscultation.

The normal breath sounds are explained, then the abnormal sounds presented with their distinguishing characteristics; finally the adventitious and voice sounds are properly observed in their diagnostic value.

The identical plan of consideration is carried out in the writing of the section on the circulatory system—part two. This is supplemented by a chapter on the electrocardiograph ably written by Krumbhaar.

Part three takes up the diseases of the bronchi, lungs, pleura, and diaphragm, and is written by Landis. Here the principles laid down in the first portion of the book are applied to the pathological condition of diseased organs or deranged systems. There is a wealth of information and an experienced judgment displayed in the skill with which each subject is discussed and beautifully illustrated by original and fine cuts. In fact all through this book the illustrations and diagrams and graphs deserve unstinted praise.

Premières Heures du Blessé de Guerre. (First hours of the wounded.) P. BERTEIN ET A. NIMIER, with a preface by MEDICIN INSPECTOR JACOB. Duodecimo; 144 pages with 50 illustrations. Paris, MASSON ET CIE., 1918.

The authors are two of the younger surgeons who have had a long experience in the front lines; and in this volume, they discuss the experiences of any soldier from "shell hole to first aid station." The character of the modern battle line and the relation thereto of the medical service introduces to us a consideration of the character of the wounds encountered, of the complications and emergencies which must be immediately met, of the facilities which are available and of the methods by which these facilities are made applicable to any one case. The various ways in which the wounded are evacuated are described, as well as the various apparatuses which can be improvised on the field. Short chapters at the end are devoted to discussions of the regional wounds, thorax, abdomen, fractures, etc.

International Clinics. A quarterly of illustrated clinical lectures and especially prepared original articles by leading members of the medical profession throughout the world. Edited by H. R. M. LANDIS, M.D. *Volume 1, Twenty-eighth series,* 1918. Philadelphia and London, J. B. LIPPINCOTT COMPANY.. Price, $2.50.

This volume contains reports of the claims of Bishop, Hawes, Polak, Lespinasse, Kretschmer, Lahey and Cumston. All of these are of timely interest and are excellently written. There are two very good papers on joint affections and on the pathology of the nails which are well worth reading. Among the other communications is one of W. Estell Lee describing the good results after secondary suture of infected wounds sterilized by Dichloramine-T. The volume is completed by a short general review of medicine for 1917.

Progress in Surgery

A Résumé of Recent Literature.

Ascending Urinary Infections: An Experimental Study. VERNON C. DAVID. *Surgery, Gynecology and Obstetrics,* February, 1918.

Injection of bacillus coli into unobstructed, non-traumatized bladders generally is not followed by a cellular exudate in the submucosa or muscularis. The colon bacilli may remain in such bladders for a month and may be isolated as such, although no lesion was produced by it.

Blood stream infection does not accompany acute, high-grade cystitis in obstructed and non-obstructed bladders. Cystitis in unobstructed bladders commonly is not accompanied by extension of the infection to the upper urinary tract. The infecting organism may be found in the ureter or the pelvis of the kidney in partially obstructed bladders, the extension being by the ureter, lumen or by contiguity of ureteral inflammation or via the periureteral lymphatics and the infection of the subpelvic tissue. Extension upward by means of the ureteral lumen is the most frequent. While periureteral infiltration is present only when a peritoneal exudate of the bladder or pelvic peritoneal exudate is present, it does not mean the same as an infection of the urinary stream. In such instances the kidney parenchyma usually is negative.

When the ureter is ligated and divided and an infected hydromephrosis is present, the infection may take place by spreading through the periureteral lymphatics to the subpelvic fat and by contiguity involve the pelvis of the kidney. In these experiments this process did not progress rapidly in point of time.

Trench Nephritis. J. C. MCWALTER. *The Medical Press,* December 20, 1917.

McWalter points out that the men who develop this type of nephritis have all been inoculated for typhoid and paratyphoid; many have received doses of anti-cholera or dysentery serum, and they had all lived to a great extent on frozen meat and tinned milk, with occasional biscuits or bread.

These patients look well, but have extreme weakness. There is no edema, but the patients look bloated. There is much lassitude, frequently headache, but no marked anemia. The urine output is not diminished and the loss of albumen is rather small. After recovery, exposure and exercise induce relapses, so that once this condition has been contracted, the patient is of little use for active service.

There seems to be no definite etiology established. Alcohol appears to have no definite bearing on this condition. The treatment is symptomatic.

Excision of Vesical Diverticula after Intravesical Invagination by Suction; A New Method. HUGH H. YOUNG. *Surgery, Gynecology and Obstetrics,* February, 1918.

Young has developed an ingenious method of operating upon and removing vesical diverticula by invaginating them into the bladder. He inserts glass tubes through the bladder opening into the very depth of the diverticula and then applies the electric air suction pump. The diverticulus is thus sucked into the tube and then is grasped with forceps while the glass tube is removed. The sac of the diverticulum is enucleated within the bladder after incising the mucosa at its base. Blunt dissection is used to separate the diverticulum from the underlying tissues. The ureter, if contained within it, is pushed back into the bladder. Intravesical closure of the defect following the removal of the sac follows, with drainage led down to it along the lateral wall of the bladder and emerging extravesically. The bladder is carefully closed with a permanent catheter or supropubic vesical drainage is established.

Young claims excellent results in seven cases in which he employed this method. For the relief of the obstructive cause of diverticulum he does a plastic operation, punch or prostatectomy.

Lithiasis with Bilateral Renal Involvement. W. F. BRAASCH, Rochester, Minn. *Boston Medical and Surgical Journal,* February 28, 1918.

1. In 17.2 per cent. of the patients in this series there was bilateral renal involvement. The percentage of bilateral lithiasis was 12.3.

2. Bilateral as well as unilateral lithiasis occurred twice as often in the male as in the female.

3. Pain in bilateral nephrolithiasis was unilateral in 64 per cent. and absent in 8 per cent. of the cases.

4. Bilateral stones were found most frequently in the pelves and calices.

5. Combined renal functional tests were of practical value only when normal or extremely low.

6. To ascertain the comparative degree of function in the two kidneys, the functional test was of value only when it was zero or a trace, normal or excessive.

7. The functional test, *x*-ray examination and cystoscopic inspection may be insufficient in determining the degree of healthy renal tissue remaining, and exploration only can determine this.

8. Indications for operation: (a) the kidney with acute complications should be operated on first; (b) without acute complications the kidney with the better function should be operated on first; (c) occasionally simultaneous bilateral operation is advisable.

9. Patients may be inoperable because of renal insufficiency, secondary infection, kidney destruction or constitutional complications.

10. Patients with large bilateral stones causing no symptoms or complications, are better off without operation.

11. The operative mortality in this series was zero; the total number of deaths after operation, ten; these patients died less than a year following operation. The operative mortality with calcareous pyonephrosis is much greater than with other forms of bilateral lithiasis.

12. The recurrences in cases of bilateral nephrolithiasis was 20 per cent.; in unilateral lithiasis, as previously reported, it was 10 per cent.

13. When there is stone in one kidney the most common forms of disease in the opposite kidney are: pyelonephritis, pyonephrosis and hydronephrosis.

14. With unilateral lithiasis the opposite kidney may be so badly diseased that a preliminary operation may be advisable on that kidney.

15. Stone secondary to pyelonephritis, when removed, prevents further renal destruction, but is not of curative value.

16. When the nephritic element predominates, removal of the stone is not of much therapeutic value.

17. A single kidney has a great degree of tolerance for repeated operation for stone.

18. In a single kidney the phenolsulphone-phthalein output usually remains high in spite of the presence of an uncomplicated stone which is probably due to compensatory hypertrophy.

Oblique Inguinal Hernia. A. M. HARVEY, Illinois Medical Journal, March, 1918.

This is a report the hernia committee, appointed by the Congress of the National Safety Council in 1916. The essentials are as follows:

The storm centre is the oblique inguinal hernia which comprises 92 per cent. or more of all herniae. Incisional hernia, umbilical hernia, femoral hernia and direct inguinal hernia, all of which are admittedly caused by anatomical defects, are usually classified as due to sickness, rather than injury.

1. The sac is the essential part of a hernia.

2. Efforts made on the cadaver to force the finger through the peritoneum into the inguinal canal are futile.

3. For a hernia to arise suddenly there must necessarily be a pre-existing sac.

4. In examining a patient, no diagnosis of hernia can be made unless the sac fills with fluid or solid contents.

5. The peritoneal fluid serves as a dilator for a latent hernia before the sac fills with solid contents.

6. There is a dimple over the internal ring in the peritoneum which may be deepened and widened by oft repeated increases in intra-abdominal pressure. It may

deepen to form a sac more readily if the canal is patulous. The latter element is helped by (a) inherited thin abdominal muscles; (b) excessive fat; (c) emaciation.

7. A hernia into a prenatal, or slowly acquired sac is not an accident.

8. The factors which increase intra-abdominal pressure are (a) coughing; (b) enteroptosis, constipation, etc.; (c) stricture, vesical tenesmus, etc.; (d) obesity.

9. Oft repeated increases in intra-abdominal pressure can cause the gradual formation of a hernia, but it is usually symptomless and a large hernia may exist before the patient becomes aware of it.

10. Direct violence may produce true traumatic herniae. Such are accompanied by intense pain, shock, vomiting, tenderness, swelling and ecchymosis; operation discloses hemorrhage and torn tissues *but no sac.*

Gastric Disturbances as a Part of Central Nervous System Syphilis. L. HARRY NEWBURGH, *Journal of the Michigan State Medical Society,* March, 1918.

It is brought out that (a) severe gastrointestinal disturbances in cerebrospinal lues are frequent; (b) these may form the chief complaint of the patient; (c) symptoms suggesting cerebrospinal disease may be vague or entirely absent; (d) the gastric symptoms may occur so early that none of the older signs of cerebrospinal lues are present and the rorrect diagnosis may depend entirely upon the examination of the cerebrospinal fluid.

Gastro-duodenal Perforation. A New Diagnostic Sign. W. T. FIELD, Salem. *Boston Medical and Surgical Journal,* Feb. 14, 1918.

As the result of his observations in three cases, Field announces a method of discovering air in the abdominal cavity by noting a shiwting of liver dullness on change of position. When the patient lies on the left side, percussion over the liver shows lympany; if the patient is now turned to the right, the liver percussion becomes dull. This is due to the fact that in the first position the fluid sinks to the bottom while the free air goes to the top, while in the second position the reverse conditions obtain. Field believes this sign to be of considerable value. "If absent, in the presence of other positive signs of perforation, it may be disregarded, but if present in doubtful cases, it may be the deciding diagnostic factor."

Surgical Shock. J. ERLANGER, R. GESELL, H. S. GASSER and B. L. ELLIOT, St. Louis. *Journal of the American Medical Association,* Dec. *22,* 1917.

In a preliminary report, Erlanger, Gesell, Gasser and Elliot describe experiments on dogs with the production of surgical shock which they arbitrarily define as a reduction of the arterial pressure to or below 50 mm. of mercury, together with the other usual signs of that condition. There were five methods used and the experiments are described and the results of each summed up. Four of the five methods, namely, obstruction of the inferior vena cava and of the aorta, injection of epinephrin and complete portal obstruction certainly produce the reduction of the blood pressure over a considerable part of the body. It is possible that the fifth method (exposure of the intestine) works in a similar manner. One of the above methods leaves unaltered the functional capacity of the brain, the spinal column, the heart, the vasomotor mechanism, etc. The obstruction of the aorta leaves the nervous factors intact. For these reasons the writers have developed a working hypothesis. Long lasting deficient blood supply starts a more or less extensive reaction, possibly of the nature of an inflammation. This causes engorgement of the small veins and capillaries and transudation of the blood plasma. If acidosis occurs in shock, might not this, the writers ask, also be the result of the deficient oxidation thus caused? They do not entirely agree with the current view that in shock the heart, the vasomotor mechanism, etc., are always normally active. From what they have done, they have gained the impression that under the influence of the low blood pressure of shock the heart, while not put out of action, has not the normal reserve and the vasomotor center does not respond as readily or markedly to reflex stimulation. They have evidence also that in shock the respiratory center is sluggish and is working very closely to its lowest limit. Reports from the war indicate the occurrence of shock in the wounded soldier, when seen soon after receiving the wound, is very rare. It usually appears in patients giving a history of great exposure to cold and to fatigue after the receipt of the injury. The writers have not yet succeeded through stimulation of the vasoconstrictor center, either reflex or direct, in causing in animals a peripheral constriction sufficiently durable to start shock. Possibly this can be accomplished only in the conscious animal, and therefore not by laboratory methods.

Adult Rectal Prolapse. Two Cases and a Contrast. R. W. JACKSON, Fall River. *Interstate Medical Journal,* January, 1918.

Jackson reports two cases. The first was operated three times: by cauterization, the Tuttle operation, and finally by amputation, but in each instance recurrence ensued. Finally the Moschcowitz operation was performed (closure of the posterior cul-de-sac by the abdominal route) with sigmoido-ventro-fixation, with complete and permanent cure. In the second case, the Moschcowitz operation was done at once, also combined with ventral suspension, and the patient is entirely well. Jackson reviews the hernia theory advanced by Moschcowitz and concludes that the operation devised by him is by all means the operation of choice for rectal prolapse, especially if combined with complex intraabdominal fixation of the uterus.

Traumatic Brain Surgery. MAJ. JOHN WESLEY LONG, M.R.C., *Southern Medical Journal,* January, 1918.

Civil life traumas of the brain resemble very closely military injuries in so far as they are modified by the character of the missile and the environment. The kinds of injuries are (a) brain traumas without visible wound; (b) scalp wounds with no apparent fracture; (c) Gutter fractures of the skull; (d) depressed fractures; (e) penetrating wounds of the brain, such as punctured wounds (as from a bayonet); (f) wounds with a missile remaining in the brain, (g) and through and through wounds. Gutter fractures always have associated with them fractures of the inner table. Penetrating wounds are supremely destructive of the brain tissue. The most important complication is infection. Cerebral herniae also become infected.

The line of treatment includes (a) primary cleansing of the wound; (b) removal to hospital for operation; (c) *x*-ray studies; (d) excision of scalp and bone wounds; (e) discriminating removal of foreign bodies; (f) covering of the exposed brain; (g) complete or partial closing of the wound; (h) only superficial drainage except with abscess; (i) lumbar puncture; (j) prolonged rest in bed.

Recent advances in neurological surgery; especially in the diagnosis and treatment in brain injuries. WILLIAM SHARPE, *Journal of the Medical Society of New Jersey,* March, 1918.

The diagnosis and treatment of brain injuries have made many advances recently but the symptology, being exceedingly varied, frequently gives rise to much confusion. The more extensive the fracture of the skull, the less seriously the brain is apt to be injured and vice versa. The most dangerous brain injuries frequently have no fracture of the skull. The most important factor to be considered in the treatment is the presence and degree of increased intracranial pressure, and, when marked, the latter furnishes adequate indication for an emergency operation.

The symptoms of advanced intracranial pressure include a lowered pulse rate, definite paralysis, and Cheyne-Stokes respiration. If allowed to go so far, an operation is of doubtful value. This should be anticipated by accurate methods of measuring the intracranial pressure, of which there are two: examination of the ocular fundus for papilledema, and estimations of the pressure of the cerebro-spinal fluid by lumbar puncture. If the intracranial hemorrhage forms very rapidly and is of large amount, the patient usually dies within a couple of hours and choked discs have little time to form. It is of great importance to recognize the early stages of increased

intracranial tension by the oedematous blurrings of the disc. By this means, patients are not allowed to reach the danger stage of medullary compression.

In selected cases of mild intracranial pressure the convalescence can be shortened and the symptoms relieved by repeated lumbar puncture.

There are two periods when operation is contra-indicated: the primary period of severe shock; and the terminal condition of medunary collapse. It is emphasized that no patient with high intracranial pressure be allowed to wait: he is to be operated upon immediately. The *x*-ray is invaluable in all cases, but one should not wait for this when there is present increased intracranial pressure.

The operation of choice is a subtemporal decompression. If the pressure is so high that the brain bulges through the opening, it is wise, in selected cases, to repeat the operation upon the opposite side immdiately. After recovery, the patients should not be permitted to engage in their ordinary occupation for three months.

The late results showed, that of the patients followed, 67 per cent. continued to have symptoms directly attributable to the injury.

Reparations Craniennes, leurs Indications, le Choix des Procedes, les Resultats. (Indications, Choice of Operation and Results of Cranial Reparative Operations.) CHARLES VILLANDRE, *Revue de Chirurgie,* July-August, 1917.

The indications for operation are the large size of the defect, its location, the presence of significant symptoms, fragility of the scar and esthetic reasons. The contra-indications are the opposite of the above plus the tension of the scar, and hypertension of cerebrospinal fluid. During operation, the scar is excised as much as possible, and an attempt is made to restore the normal layers. The best results are obtained from osteo-periosteal grafts, from cartilage grafts, and from cranioplastic operations. Operation is done under a general anaesthetic.

The results have been very good; the symptoms have disappeared or been much ameliorated (headache, convulsions, vertigo). No case has been aggravated. The result is superior to the protection afforded by an appliance.

Paget's Disease of the Bone: Excellent Repair after Surgical Operations. ROBERT ABBE, New York. *Journal of the American Medical Association,* Feb. 9, 1918.

Abbe says that although Paget's disease appears first on some isolated bone, it is not essentially a one-bone disease. Usually it is noticed in a curvature and enlargement of one tibia, femur, clavicle or ulna. Nevertheless, in almost all cases, the roentgen ray will reveal a thickening of the frontal, parietal or occipital bones, sometimes to an enormous degree to an inch in thickness. The essential condition is one of chronic osteitis, productive of spongy overgrowth, with absorption of the compact structures in the long bones, and occasional development of cysts lined by epithelium, sometimes filled with fluid or granulation tissue. In the skull, the enlargement is never at the expense of the cranial cavity. Occasionally, though rarely, a sarcomatous degeneration may follow. The disease is not so uncommon as would be implied by the lack of knowledge concerning it and the number of cases that go unrecognized. The object of the writer's paper is to call attention to its not infrequent appearance in the jaw bones and the admirable repair of the diseased bones when surgical treatment is required. In fourteen private cases of this disease seen in recent years, four cases with jaw complications have come under his notice and in two of these, excellent results were obtained by an extensive surgical operation. In one case, a lawyer was restored to useful life by a bold and successful operation, which the writer describes.

Spiral Fractures of the Tibia. C. DAVISON, Chicago. *American Journal of Medical Science,* March, 1918.

Spiral fractures of the tibia are usually due to indirect violence and are accompanied by fracture of the fibula, the latter usually impacted in rotation. The fracture of the tibia is uniformly at the junction of the middle and lower thirds; the fibula, on the other hand, is usually broken at its upper part. Reduction of spiral fractures of the tibia by external manipulation and extension is not possible while the impaction of the fibula remains. Even when the fragments of the fibula are liberated, it is usually impossible to reduce the fracture in the tibia because of the entanglement of the upper end of the lower fragment of the fibula. For this reason treatment of such fractures by external mobilization is usually unsatisfactory, because the result is either poor union or non-union of the tibia. For these reasons, Davison advises open operation, preferably with transplantation of bone. Davison describes the technique and reports three such operations.

Analgesia. J. H. GWATHMEY, M.D., New York, and H. T. KARSNER, M.D., Cleveland. *Journal of the American Medical Association.* April 6, 1918.

J. T. Gwathmey (New York) and H. T. Karsner (Cleveland), France (*Journal T. M. A.,* April 6, 1918), after remarking on the frequency of fracture in war wounds and the need of keeping such patients quiet to avoid pain, say that general analgesia produced simply and quietly without removing the patient from his bed, is the logical solution of thsi difficulty. It is, of course, applicable to practically all painful dressings, and is being adapted to short surgical operations. In such operations, however, it is sometimes necessary to supplement the analgesia with procain, a hypodermic injection of morphin, or even by light inhalation anesthesia. Experiments were made on rabits. The analgesic was administered by a stomach tube after which the animals were immediately released and placed under observation. Various drug combinations were used and they were not especially successful, but with rabbits the best results followed the use of ether in oil. Olive oil was found, however, to be irritating to the stomach, and liquid petrolatum was substituted in the clinical experiments. The mixtures containing paradehyd much less so, but at the suggestion of Major Lower, this difficulty was obviated by sandwiching the doses of ether-oil between two ounces of port wine, given separately. While it is well not to give the analgesic just after a meal, no special preparation is necessary. Six cases are reported briefly in which this method was successfully used. Chloroform was substituted in the later tests, and found even more satisfactory. The authors conclude that, from these observations, it appears that general analgesia is safer than general anesthesia. Fifty per cent. ether in petrolatum, or other bland oil, is probably the safest general analgesic, causing apparently no bad effects on the stomach and is not followed by the nausea and vomiting common to ether anesthesia. It can be taken without disagreeable taste by the sandwich method mentioned, and is especially indicated for dressing painful wounds without removing the patient from his bed or ward.

An Experimental Study and Clinical Study of Chloroform, Ether and Nitrous-Oxide-Oxygen in Pregnancy and Labor. C. HENRY DAVIS. *Surgery, Gynecology and Obstetrics,* February, 1918.

Davis found that the prolonged administration of chloroform, ether or nitrous-oxide-oxygen to pregnant or non-pregnant animals, if repeated on successive days, causes degenerative changes in the tissues. The changes found in the liver are the most constant. Those following the use of chloroform are the most severe.

Nitrous-oxide-oxygen and ether induce cell-asphyxiation, while central necrosis is more marked following the use of chloroform. Ether has a less dangerous influence upon the fœtus in utero than the other two anæsthetics. Pure oxygen does not remove the danger of prolonged chloroform administration.

The nitrous-oxide-oxygen inhalation analgesia, however, has no deleterious effect upon the fœtus, as four or six inhalations at the beginning of the contraction can scarcely disturb the normal metabolism. The effects are gone by the end of the contraction and normal metabolism is not disturbed during the interval. Prolonged operations during pregnancy should be avoided, but, if necessary, ether appears to be less harmful to the fœtus in utero or to the new-born than chloroform or the gas.